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1928/29

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, January 19th, 1928, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
William H. Darling	May 4th, 1871.	Nov. 18th, 1927.
Alfred M. Hanson	Feb. 21st, 1889.	Dec. 7th, 1926.
Lucy Higginbotham	Dec. 7th, 1922.	Nov. 22nd, 1927
Thomas E. Mackenzie	Feb. 15th, 1900.	Oct. 18th, 1927.
Alfred J. Squires	Feb. 18th, 1892.	Oct. 9th, 1927.

The PRESIDENT announced that:

1. The names of members of Council who retire at the Annual General Meeting on March 22nd, 1928, and who are ineligible for re-election to the same office until after the lapse of one year, are as follows:

President: Prof. H. B. BAKER.
Treasurer: Prof. J. F. THORPE.
Secretary: Dr. T. SLATER PRICE.
Vice-Presidents who have filled the office of President: Prof. H. E. ARMSTRONG, Dr. ALEXANDER SCOTT, Prof. W. P. WYNNE.
Vice-Presidents who have not filled the office of President: Prof. J. B. COHEN, Dr. N. V. SIDGWICK.

Ordinary Members of Council:

(*a*) Town Members: Prof. H. BASSETT, Mr. F. W. GAMBLE, Dr. J. KENYON, Mr. B. D. PORRITT, and Mr. G. STUBBS.
(*b*) Country Members: Dr. F. A. FREETH and Prof. F. J. WILSON.

The following vacant places in the Council fall due to be filled at the Annual General Meeting of the Society, which will be held at Burlington House on Thursday, March 22nd, 1928, at 4 p.m.:

President	One vacancy.
Treasurer	One vacancy.
Secretary	One vacancy.
Vice-Presidents who have filled the office of President	Three vacancies.

(*Note.—Sir William J. Pope was elected last April to fill the vacancy caused by the death of Dr. A. W. Crossley; his election will be confirmed at the next Annual General Meeting.*)

Vice-Presidents who have not filled the office of President	Two vacancies.
Ordinary Members of Council:	
(*a*) Town Members (*i.e.* those living within a radius of 50 miles from London)	Six vacancies.
(*b*) Country Members (*i.e.* those living beyond a radius of 50 miles from London)	Two vacancies.

(*Note.—This year the vacancies in category* (a) *are increased by one owing to the resignation of Dr. R. H. Pickard, who is no longer resident in the London area.*)

The Council has nominated Prof. J. F. THORPE to the office of President; Dr. T. SLATER PRICE to the office of Treasurer; and Prof. T. S. MOORE to the office of Secretary.

2. The following Address of Congratulation had been presented to the Institute of Chemistry on December 15th, 1927, the occasion of the Jubilee Celebrations of the foundation of the Institute:

The Chemical Society
to
The Institute of Chemistry of Great Britain and Ireland.

We, the President and Fellows of the Chemical Society, offer our most cordial congratulations to the President, Fellows, and Associates of the Institute of Chemistry on the auspicious occasion of the Jubilee Celebration of the Foundation of the Institute.

It is with the sincerest pleasure and gratitude that we place on record our deep sense of the eminent services which the Institute of Chemistry has so constantly rendered to the profession of Chemistry. Throughout the fifty years of its existence, the Institute, by means of its examinations, its high ideals of professional conduct, and its watchful guard over the interests of properly qualified chemists, has striven with remarkable success to raise the standard of professional knowledge and practice, and to secure for the profession of chemistry the status in our national life which it so eminently deserves.

The Chemical Society regards with the highest esteem and appreciation the achievements of the Institute. It recalls with a deep sense of gratitude the names not only of that eminent band of men who founded it, but of those who, by their devoted labour during the past fifty years, have contributed so materially to the furtherance of the profession of Chemistry. The Institute of Chemistry may continue to rely on the co-operation of the Chemical Society in the pursuance of the work it has taken in hand.

Signed on behalf of the Chemical Society,

H. B. Baker,	*President.*
Jocelyn Thorpe,	*Treasurer.*
T. Slater Price, C. S. Gibson,	*Secretaries.*
F. G. Donnan,	*Foreign Secretary.*

Sealed in Council this fifteenth day of December, One Thousand Nine Hindred and Twenty-Seven.

The following were formally admitted Fellows of the Chemical Society: B. J. Corder, F. G. Kny-Jones, M. P. Oommen, M. J. Wilson-Smith, E. N. Eccott, F. L. Warren, and W. D. Scott.

Certificates were read for the first time in favour of:

Stanley Baker, M.Sc., Ph.D., Holmside, Bedlington, Northumberland.
Ramesh Chandra Banerji, M.Sc., Sainyer Gate, Jhansi, U.P., India.
Harold Hayden Barber, B.Sc., F.I.C., Arch Hill, Arnold, Notts.
Harold Graham Bott, B.Sc., 167, Stratford Road, Sparkbrook, Birmingham.
Reginald Bowsher, B.Sc., 9, Byron Road, Wembley.
Bibhuti Bhuson Chaudhuri, M.Sc., Chemical Inspector's Office, Indian Ordnance Department, Kirkee, India.
William Fraser Donald, 74, Railway Parade, Kogarah, Sydney.
Tom Farrar, 41, Bridget Street, Rugby.
George William Ferguson, 7A, North Road, Highgate, N. 7.
Frank Lathe Gilbert, B.Sc., 23, Guest Road, Cambridge.
Horace Arthur Hampton, B.Sc., 13, Arch Hill Street, Netherton, Dudley.
Clive Whelpton Holman, A.M.I.Mech.E., Clarendon Hotel, Montpelier Road, Blackheath, S.E. 3.
Marshall Holmes, M.Sc., Sudan Club, Khartoum.
James Hood, 21, Dock Street, Dundee.
Arthur Jackson, B.Sc., 66, Taylor Hill Road, Huddersfield.
Anantrao Ramchandra Kagal, B.A., B.Sc., 3/17, Bhagirathi Buildings, Chikalwadi, Grant Road, Bombay.
Herbert Davenport Kay, Ph.D., D.Sc., 7, Victoria Road, Chingford, E. 4.
Frank Eugene Lathe, B.A., M.Sc., National Research Council, Ottawa.
Kenneth Hugh Lauder, B.Sc., St. Andrew's College, The University, Sydney.
Abraham Learner, B.Sc., 509, Bristol Road, Selly Oak, Birmingham.
John Vaughan Loach, B.Sc., 6, Twyning Road, City Road, Birmingham.
John Longwell, M.Sc., A.I.C., 45, Warrington Crescent, Maida Vale, W. 9.
Charles George Lyons, B.A., Trinity Hall, Cambridge.

Birendra Keshary Mandal, Jharia Mines Board of Health, Dhanbad, India.
Hamilton Ryoichi Matsuda, c/o Tokushima Technical College, Shikoku, Japan.
Thomas Henry Morton, B.Sc., 2, Trinity Street, Langley, Birmingham.
Leslie Wallace Mullinger, 149, Fillebrook Road, Leytonstone, E. 11.
William George Painton, B.Sc., A.I.C., 17, Marlborough Road, Gunnersbury, W. 4.
Eric Pascal, M.A., 68, Hadham Road, Bishop's Stortford.
Walter A. Patrick, B.Sc., Ph.D., Johns Hopkins University, Baltimore, Md., U.S.A.
William Arthur Roach, B.Sc., A.R.C.S., A.I.C., Ford House, High Street, West Malling, Kent.
Hans Nicolai Kellermann Rördam, D.Sc., Polyteknisk Læreanstalt, Sölvgade 83, Copenhagen K.
Roland Scott, River View, Middleton-One-Row, Darlington.
Babu Lal Singh, The Shree Krishna Deshi Sugar Works, Jhusi, B.N.W.Ry., Allahabad.
Henry Geoffrey Smith, B.Sc., 39, Headingley Mount, Headingley, Leeds.
James Andrew Buchan Smith, B.Sc., 35, St. John's Road, Selly Park, Birmingham.
Flaxney Percival Stowell, B.Sc., Ph.D., 10, Grosvenor Mansions, Broad Walk, Buxton.
Harold Warris Thompson, Trinity College, Oxford.
Clarence Cyril Tipper, B.Sc., 6, Rochester Road, Southsea.
Robert Stuart Tipson, B.Sc., 111, Allesley Road, Coventry.
Ralph Cuthbert Traill, M.Sc., Clare College, Cambridge.
William Reed Veazey, A.B., Ph.D., Case School of Applied Science, Cleveland, Ohio, U.S.A.
Ahmed Kamel Wahbi, 329, Great Western Street, Rusholme, Manchester.
Angus FitzCharles Henderson Ward, B.A., B.Sc., 7, Manor Street, Cambridge.
John Ivor Webb, B.Sc., 12, Third Avenue, Selly Park, Birmingham.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) in favour of :

George Ernest Barton-Hobbs, 236, Chelmsford Road, Durban, Natal.
Mario Betti, Dr.Chem., R. Universita, Bologna.
Constant Frederik van Duin, Ph.D., 34, Nieuwe Gracht, Utrecht.
Thomas Robert Hughes, 47, Colin Street, West Perth, Australia.
Giorgio Renato Levi, Dr.Chem., Viale Romagna, 37, Milan.
Fritz Lenze, Eisenzahnstrasse 5, Berlin.

The following papers were read :

"*cyclo*Telluropentane." By. G. T. Morgan and H. Burgess.

"Syntheses of cyclic compounds. Part II. Racemic and meso ethyl βγ-diphenylbutane-αααδ-tetracarboxylate. Synthesis of a truxinic acid." By I. Vogel.

"Properties of conjugated compounds. Part IV. The formation of isomeric additive dibromides from butadiene." By E. H. Farmer, C. D. Lawrence, and J. F. Thorpe.

ORDINARY SCIENTIFIC MEETING, THURSDAY, FEBRUARY 2nd, 1928, AT 8 P.M.

At present the following papers have been received for reading:

"Some experiments on diffusion in solid metals." By J. W. JENKIN and C. H. DESCH.

"The alkaloids of some Indian aconites; *Aconitum rotundifolium*, *A. Balfourii*, and *A. deinorrhizum*." By T. A. HENRY and T. M. SHARP.

"The synthesis of *meso*-alkyl and *meso*-aryl anthracene derivatives. Part III." By E. DE BARRY BARNETT and J. W. COOK.

LECTURE.

Professor A. Fowler, F.R.S., will deliver his Lecture entitled "Spectra and Atoms" in the Rooms of the Society on Thursday, February 23rd, 1928, at 8 p.m.

ANNUAL GENERAL MEETING AND ANNIVERSARY DINNER.

The Annual General Meeting will be held in the Society's Rooms on Thursday, March 22nd, 1928, at 4 p.m., and the Anniversary Dinner will take place the same evening at the Hotel Victoria, Northumberland Avenue, W.C. 2.

List of Papers, or Abstracts thereof, received between December 1st, 1927, and January 19th, 1928. (This List does not include the titles of papers which have appeared in the Journal, or which have been read at a Scientific Meeting.)

"The nitration of benzaldoxime and some of its derivatives." By O. L. BRADY and B. E. M. MILLER.

"The rearrangement of benzyl phenyl ether." By W. F. SHORT.

"The addition of bromine to ethylenic compounds in non-hydroxylic solvents." By D. M. WILLIAMS and T. C. JAMES.

"The effect of catalysts on the speed of explosion, infra-red emission, and ionisation of gaseous explosions of carbon monoxide and oxygen." By W. E. GARNER and C. H. JOHNSON.

"Composition of bleaching powder." By C. T. KINGZETT.

"Syntheses in the phenazine series." By H. MCCOMBIE, H. A. SCARBOROUGH, and W. A. WATERS.

"The oxidation of diphenylamine in concentrated sulphuric acid solution." By S. H. TUCKER.

"Studies on hydrogen cyanide. Part I. Mercury methyl cyanide and the alleged isomerides of hydrogen cyanide." By J. E. COATES, L. E. HINKEL, and T. H. ANGEL.

"α-*iso*Propylglutaconic acid." By K. V. HARIHARAN, K. N. MENON, and J. L. SIMONSEN.

"The constituents of Indian turpentine from *Pinus longifolia*, Roxb. Part IV." By P. P. PILLAY and J. L. SIMONSEN.

"The parachor and chemical constitution. Part VII. Further examples of semipolar double bonds." By A. FREIMAN and S. SUGDEN.

"The nature of the alternating effect in carbon chains. Part XXIII. Anomalous orientation by halogens, and its bearing on the problem of the *ortho–para* ratio, in aromatic substitution." By C. K. INGOLD and C. C. N. VASS.

"The nature of the alternating effect in carbon chains. Part XXIV. The directive action in aromatic substitution of certain groups containing unsaturated linkings." By J. W. BAKER, K. E. COOPER, and C. K. INGOLD.

"The action of alcoholic potassium hydroxide upon *o*-, *m*-, and *p*-nitrophenetoles." By D. H. RICHARDSON and F. W. SMITH.

"The adsorption of hydrogen ions and its effect on the swelling and electrical charge of gelatin." By B. N. GHOSH.

"Nitrosation of phenols. Part V. 5-Chloro-3-hydroxyanisole. An example of an *o*-nitrosophenol." By H. H. HODGSON and J. S. WIGNALL.

"On the possibility of ring-chain valency tautomerism and of a type of mobile-hydrogen tautomerism analogous to the Wagner–Meerwein re-arrangement." By C. K. INGOLD and C. W. SHOPPEE.

"The parachor and chemical constitution. Part VIII. Ring-chain valency tautomerism in phorone derivatives." By S. SUGDEN.

"Some sulphur derivatives of aromatic methyl ethers." By H. H. HODGSON and F. W. HANDLEY.

"The ratio of the heats of combustion of benzoic acid and salicylic acid. (A reply to E. Berner.)" By P. E. VERKADE and J. COOPS.

"Synthetical experiments in the phenanthreno*iso*quinoline alkaloids. Part I. A synthesis of 1 : 2-dimethoxyaporphine." By J. M. GULLAND and R. D. HAWORTH.

"Optically active derivatives of phenylaminoacetic acid." By A. MCKENZIE and N. WALKER.

"Investigations on the preparation of organic compounds of antimony: *p*-tolyl derivatives." By A. E. GODDARD and V. E. YARSLEY.

"Equilibrium between alcohols and salts. Part II." By E. LLOYD, C. B. BROWN, D. G. R. BONNELL, and W. J. JONES.

"Syntheses in the indole series. Part III. The theory of anhydronium base formation and the constitution of metho-sulphates with some observations on the fluorescence of 5 : 6-benz-4-carboline and its derivatives." By W. O. KERMACK and R. H. SLATER.

"Note on the nitration of benzylaniline." By J. REILLY and J. J. MOORE.

"The acetoacetic ester condensation." By M. C. FRANKLIN and W. F. SHORT.

"The Budde effect with a mixture of bromine vapour and air." By E. BROWN and D. L. CHAPMAN.

"The chlorination of anilides. Part II. The decomposition of *N*-chloroacetanilide by heat." By A. E. BRADFIELD.

"The solution tension of silver in solvents other than water." By F. K. V. KOCH.

"Caproic and caprylic allyl esters." By V. DEULOFEU.

"The synthesis of *meso*-alkyl and *meso*-aryl anthracene derivatives. Part III." By E. DE B. BARNETT and J. W. COOK.

"Reaction between nitrous acid and hydrogen sulphide." By L. S. BAGSTER.

"Autoxidation during slow combustion." By E. W. J. MARDLES.

"Studies in China wood oil. Part II. The oxidation of β-elæo-stearic glyceride." By R. S. MORRELL and S. MARKS.

"A chemical method for preparing carbon hydrosol." By E. CHIRNOAGA.

"The electro-deposition of indium with the dropping mercury cathode." By S. TAKAGI.

"Aromatic thionyl and chlorothionyl derivatives. Part IV. The mechanism of the condensation of thionyl-phenols with organic acids. The estimation of phenols in the presence of their acetates." By F. E. JONES and A. GREEN.

"Some experiments on diffusion in solid metals." By J. W. JENKIN and C. H. DESCH.

"The origin of the spectrum of the glow of phosphorus." By H. J. EMELÉUS and R. H. PURCELL.

"Derivatives of γ-xylose. A study of xylosemonoacetone and its conversion into 2 : 3 : 5-trimethyl γ-xylonolactone." By W. N. HAWORTH and C. R. PORTER.

"The absorption spectra of anthracene derivatives. Part I." By E. DE B. BARNETT, J. W. COOK, and T. E. ELLISON.

"Derivatives of 1 : 3-dithiolane and of 1 : 3-dithian." By J. C. A. CHIVERS and S. SMILES.

"The introduction of the triphenylmethyl group into phenols." By D. R. BOYD and D. V. N. HARDY.

"Colloidal platinum. Part III. The natural acidity and the acid coagulation of colloidal platinum." By S. W. PENNYCUICK and R. J. BEST.

"Studies in the sub-atomic structure of the elements. Part I." By L. H. SENSICLE.

"Acid and salt effects in catalysed reactions. Part XII. The water catenary of ($H-H_2O-OH$) in the iodination of acetone." By H. M. DAWSON and A. KEY.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, FEBRUARY 16TH, 1928.

BAKER, STANLEY, Holmside, Bedlington, Northumberland. British. Chemist. M.Sc. (Dunelm). Research student at Armstrong College from 1921 to 1924. Ph.D. (Dunelm) 1925. *J.C.S.*, 1925, **127**, 365. (*Signed by*) W. N. Haworth, W. Charlton, Stanley Peat, Harald Nielsen.

BARBER, HAROLD HAYDEN, Arch Hill, Arnold, Notts. British. Chemical Research and part-time lecturer, University College, Nottingham. B.Sc. Hons. Chemistry, London. Fellow of the Institute of Chemistry. "The Production of Fat by a Species of *Penicillium* grown in Sucrose Solution," *J. Soc. Chem. Ind.*, 1927, 200T. (*Signed by*) F. Stanley Kipping, F. C. Laxton, B. D. Shaw.

BOTT, HAROLD GRAHAM, 167, Stratford Road, Sparkbrook, Birmingham. British. Research Student, University of Birmingham. B.Sc. (Hons. 1st). (*Signed by*) W. N. Haworth, H. D. K. Drew, E. L. Hirst.

BOWSHER, REGINALD, 9, Byron Road, N. Wembley, Middlesex. British. Technologist to E. H. Spicer & Co., Ltd., 72, Wigmore St., W. 1. B.Sc., Pure Chemistry, 2nd Class Hons. (external) (Heidelberg, No. 2714). Consulting Chemist to above firm, also acting in same capacity in Great Britain for the Abbott Laboratories, Chicago, and Chemisch. Pharmaceutische A.-G. Bad., Hamburg. (*Signed by*) John Dall, Thomas Stephenson, William Robson.

BUTTERWORTH, BASIL, 6, Belgrave Road, Wanstead, E. 11. English. Research Student at the East London College. B.Sc. (London). (*Signed by*) W. H. Patterson, D. C. Jones, E. Roberts.

CATTERMOLE, JESSIE, 207, Norbury Crescent, London, S.W. 16. British. A Student in Chemistry. (*Signed by*) James F. Spencer, Mollie Barr, Ernest S. Hedges.

CHAUDHURI, BIBHUTI BHUSON, Chemical Inspector's Office, Indian Ordnance Department, Kirkee, India. Indian. Third Assistant to the Chemical Inspector, I.O.D. M.Sc., Class I, in Applied Chemistry (Calcutta University). Working as the third assistant to the Chemical Inspector, Indian Ordnance Department. (*Signed by*) J. N. Mukherjee, A. Marshall, M. L. Dey.

COHEN, JACOB DAVIS, 24, Alconbury Road, Clapton, London, E. 5. British. Research Student. B.Sc. (Lond.) 1926 (Hons.). A.C.G.F.C. (1926). Neil Arnott Scholarship and Medal, July 1926. Since Oct. 1926 I have been carrying out physical chemistry research at Imperial College—Royal College of Science. (*Signed by*) James C. Philip, H. J. T. Ellingham, J. L. E. Lewkowitsch, M. K. Maitra.

CROSSLEY, MOSES LEVEROCK, 734, Park Avenue, Plainfield, New Jersey. American. Chief Chemist, Calco Chemical Co., Bound Brook, N.J. Prior to 1918 Prof. of Chemistry, Wesleyan University. Author of several technical and non-technical papers, published in American Journals. President, American Institute of Chemists, 1924— . (*Signed by*) A. Clayton, Alan W. C. Menzies, L. W. McCay.

DONALD, WILLIAM FRASER, 74, Railway Parade, Kogarah, Sydney, Australia. Australian. Pharmacist. Certificate of Department of Pharmacy, University of Sydney, late Chief Assistant Chemist, Laboratory of Australian Drug Co., Ltd., Sydney; late Chief Assistant Chemist, Laboratory of Elliott Bros., Ltd., Sydney. Desires to receive the publications of the Society in order to keep in touch with the progress of chemistry. (*Signed by*) John Duncan, Thos. H. Moore, G. F. Merson.

FARRAR, TOM, 41, Bridget Street, Rugby. British. Chief Chemist and Supervisor of Manufacture (Cement). Twenty-five years' experience in the scientific side of cement manufacture, after laboratory training at the Craven Science School, Hull, and the Hull Technical Schools (known to-day as the Hull and Yorkshire Technical College), and then pupil under Dr. Prentice and James Watson, B.Sc., etc. (*Signed by*) Cecil B. O. Jones, Percy G. Lloyd, Jas. H. Edmondson.

FENTON, GEOFFREY WILLIAM, 7, St. John's Avenue, Newsome, Huddersfield, Yorks. British. Research Student of Organic Chemistry, Leeds University. B.Sc. (Hons.), Leeds 1927. Training in the methods of scientific research under the direction of Professor C. K. Ingold, F.R.S. (*Signed by*) C. K. Ingold, C. W. Shoppee, E. Rothstein.

FERGUSON, GEORGE WILLIAM, 7A, North Road, Highgate, N. 7. British. Assistant to Consulting Chemist. Student at Birkbeck College, University of London. (*Signed by*) Ernest J. Parry, C. T. Bennett, Samuel Sugden.

FLINT, CAPTAIN JAMES, M.C., 82, Sunny Gardens, Hendon, London, N.W. 4. British. Manager Scientific and Research Dept., Sandoz Chemical Works. Member of the Pharmaceutical Society. Associated with the manufacture of chlorophyll and alkaloids by special processes. (*Signed by*) F. S. Kipping, J. B. Firth, F. C. Laxton, B. D. Shaw, E. B. R. Prideaux.

GILBERT, FRANK LATHE, 23, Guest Road, Cambridge. British. Research Student. B.Sc. (special), London University. First Class Honours Chemistry. *J.C.S.*, 1927, 2164, 2295. (*Signed by*) T. M. Lowry, G. Jessop, Rose R. Goldstein.

GOODEVE, CHARLES FREDERICK, University College Hall, Ealing, W. 5. British. Research Student. B.Sc. (Manitoba) 1925. M.Sc. (Manitoba) 1927. Publications: "Alternating Current Electrolysis," *Eng. Journ. Can.*, 1927, **10**, 3; *Trans. Am. Electrochem. Soc.*, 1927, **51**, 273; *Trans. Roy. Soc. Can.*, 1927. Assistant Lecturer (Manitoba), 1925–27. 1851 Exhibition Scholar, 1927. (*Signed by*) F. G. Donnan, S. Barratt, B. Topley.

GOSSET, MARION, 17, Queen Anne's Grove, Bedford Park, Chiswick, W. 4. British. Junior Assistant, Science Library, Science Museum, S.W. 7. A.R.C.S. (Chemistry). Hons. B.Sc. (London, Chemistry). Student at the Royal College of Science, Imperial College of Science and Technology, 1921–25. (*Signed by*) H. B. Baker, M. A. Whiteley, James C. Philip, Jocelyn Thorpe.

GRANT, EDGAR BEATTIE, 7, Alexandra Place, Jesmond, Newcastle-on-Tyne. English. Chemist. Member of the Pharmaceutical Society of Great Britain. Have been studying for the major examination at the above Society's College in London, and obtained Ph.C. in April, 1927. (*Signed by*) J. B. Firth, D. Foggan, William Mair.

GROVES, LESLIE GEORGE, 22, Chadway, Chadwell Heath, Essex. British. Research Student. B.Sc. (Hons.) London. (*Signed by*) E. E. Turner, R. J. W. Le Fèvre, H. A. Mayes.

GULL, HERBERT CHARLES, 26, Twyford Road, Ilford, Essex. British. Research Student at East London College. B.Sc. (London, 1st Class Honours in Chemistry). (*Signed by*) E. E. Turner, R. J. W. Le Fèvre, A. Brewin.

HAGYARD, THOMAS, 3, Station Road, Eaglescliffe S.O. Co. Durham. English Technical Chemist. External London B.Sc., special, Chemistry, 1st Class Hons. About four years' Industrial Research at Messrs. Stockton-on-Tees Chemical Works, under the direction of D. Tyrer, D.Sc. Now studying for External London M.Sc. (*Signed by*) Allan E. Mitchell, W. J. V. Ward, R. G. Franklin.

HAMPTON, HORACE ARTHUR, 13, Arch Hill St., Netherton, nr. Dudley. British. Research Chemist at the Birmingham University. First Class Honours B.Sc. in the School of Chemistry at the Birmingham University. (*Signed by*) W. N. Haworth, E. L. Hirst, H. D. K. Drew.

HEY, DONALD HOLROYDE, 14, Grosvenor Road, Sketty, Swansea. British. Research Student. B.Sc. (Lond.). B.Sc. (Wales), 1st Class Hons. in Chemistry, University of Wales Post-graduate Studentship. "The Effect of Electrode Material on Oxidation Potentials," Butler, Hugh, and Hey; *Trans. Faraday Soc.*, 1926, **21**. (*Signed by*) J. E. Coates, L. E. Hinkel, E. E. Ayling, N. H. Hartshorne.

HOLMAN, CLIVE WHELPTON, Fraser and Chalmers Works, Erith, Kent. English. Mechanical Engineer. Graduate and, later, Associate by Examination, of the Institution of Mechanical Engineers. For some years employed by the South Metropolitan Gas Company. Now interested in mining and metallurgical plant, employed at Fraser and Chalmers Works. (*Signed by*) Bernard W. Holman, J. W. Hinchley, J. N. Sugden.

HOLMES, MARSHALL, Sudan Club, Khartoum, The Sudan. British. Lecturer in Chemistry and Physics, The Kitchener Medical School, Khartoum. M.Sc. (Belfast). Lecturer in Chemistry and Physics, The Kitchener School of Medicine, Khartoum. *J.C.S.*, 1926, 1690, 1898. (*Signed by*) A. J. Allmand, Samuel Smiles, E. W. McClelland.

HOLMES, THEODORA MARY, 24, Clifton Gardens, London, W. 9. British. Research Chemist. A.R.C.S. (Chemistry), Hons. B.Sc. London (Chemistry). Student at the Royal College of Science, Imperial College of Science and Technology, 1922–27. (*Signed by*) H. B. Baker, M. A. Whiteley, James C. Philip, Jocelyn Thorpe.

HOOD, JAMES, 21, Dock Street, Dundee, Forfarshire. British. Pharmacist. Member of the Pharmaceutical Society of Great Britain. Chief Pharmacist, Dundee Royal Infirmary. I am interested in practical and theoretical chemistry. (*Signed by*) William McHutchison, Andrew S. Matchet, William Mair.

HORTON, MIRIAM IVY, 59, Ingleby Road, Ilford, Essex. British. Student at East London College since Oct. 1924. (*Signed by*) E. E. Turner, E. Roberts, A. Brewin.

JACKSON, ARTHUR, 66, Taylor Hill Road, Taylor Hill, Huddersfield, Yorkshire. British. B.Sc. (1st Class) Chem. Leeds. Research Student, Organic Chemistry Dept., Leeds University. (*Signed by*) C. K. Ingold, Florence R. Shaw, H. Burton.

JAMES, ROBERT GILBERT, "Belle Vue," Harold Road, Deal, Kent. British. Research in Pure Chemistry, University of Birmingham (D.S.I.R. Research Grant for 1927–28). Ordinary Degree of B.Sc., 1st Division and

Distinction in Chemistry (1924), and Honours Degree, 1st Class (1925), Birmingham University. Elected A.I.C. (1927). Chidlaw Exhibition (1922) to Birmingham University (on Joint Board Higher School Certificate, in which I obtained a Distinction in Chemistry). "Co-ordination Compounds of Quinquevalent Molybdenum," *J.C.S.*, 1927, 2145. (*Signed by*) Wm. Wardlaw, H. M. Spittle, W. J. Hickenbottom, F. W. Pinkard.

KAGAL, ANANTRAO RAMCHANDRA, 3/17, Bhagirathi Buildings, Chikalwadi, Grant Road, Bombay, India. Indian. Factory Inspector (Bombay Government). B.A. B.Sc. (Hons. Chem.) (Bombay University). Four years with The Eastern Chemical Co., Ltd., Bombay, manufacturers of heavy chemicals. (*Signed by*) Harry Sharpe, A. R. Normand, Sadashiv Parashuram Nair.

KAY, HERBERT DAVENPORT, 7, Victoria Road, Chingford, E. 4. British. Beit Memorial Fellow for Medical Research. Ph.D. (Cambridge). D.Sc. (Manchester). Various papers on enzymes, phosphorus metabolism, etc., in *Biochemical Journal* and medical journals. (*Signed by*) Arthur Smithells, F. Gowland Hopkins, Arthur Harden, J. C. Drummond.

LATHE, FRANK EUGENE, National Research Council, Ottawa, Canada. Canadian. Metallurgical Chemist. B.A. (Chem.). B.Sc. and M.Sc. (Metallurgy), McGill University. (*Signed by*) Frank T. Shutt, R. B. Walker, F. G. Wait.

LAUDER, KENNETH HUGH, St. Andrew's College, The University, Sydney, N.S.W., Australia. British. Science Research Scholar, Sydney University. B.Sc. (Hons., Class I, Chemistry), Sydney. Science Research Scholar in Chemistry at Sydney University. Tutor in Chemistry at St. Andrew's College, Sydney University. Paper on Alumini-Oxalates, unpublished as yet, but ready for publication. (*Signed by*) Charles E. Fawsitt, G. J. Burrows, J. Kenner, J. C. Earl, Francis Lions.

LEARNER, ABRAHAM, 509, Bristol Rd., Selly Oak, Birmingham. English. Research Student. B.Sc., Durham, Honours Chemistry. Research under Prof. Haworth, D.Sc., at University of Birmingham since Sept. 1925. Haworth, Hirst, and Learner, *J.C.S.*, 1927, 1040, 2432. (*Signed by*) W. N. Haworth, H. D. K. Drew, S. Peat.

LEONARD, ALFRED WILLIAM, 72, Hatherley Gardens, East Ham, London, E. 6. British. Research Student, East London College. B.Sc. (Hons. Chem.), London University. (*Signed by*) E. E. Turner, H. A. Mayes, A. Brewin.

LOACH, JOHN VAUGHAN, 6, Twyning Road, City Road, Birmingham. British. Research Student, Chemistry Dept., Birmingham University. B.Sc., 1st Class Hons. in Chemistry. University Scholar. McCarthy Exhibitioner. (*Signed by*) W. N. Haworth, Wm. Wardlaw, C. E. Wood, H. D. K. Drew, H. M. Spittle, L. W. Needham, Stanley Peat, W. Charlton.

LONGWELL, JOHN, 45, Warrington Crescent, Maida Vale, London, W. 9. British. Temporary Assistant Chemist, Government Laboratory. B.Sc. (1st Hons.). M.Sc., Queen's University, Belfast. A.I.C. Research (postgraduate) at King's College, London. Science Master at the Academical Institution, Coleraine, North Ireland. Assistant Chemist at the Government Laboratory. *J.C.S.*, 1923, **123**, 3310. (*Signed by*) J. W. A. Woodley, E. H. Nurse, J. J. Fox.

LOVETT, ARTHUR BERTRAM EDMUND, 4, Prior Street, Greenwich, S.E. 10. British. Student. B.Sc. (Lond.), 1st Class Honours, 1927. (*Signed by*) E. E. Turner, D. C. Jones, E. Roberts.

LYONS, CHARLES GEORGE, Trinity Hall, Cambridge. English. Research Student. B.A., 1st Class Part II, Natural Sciences Tripos, Cambridge. Just

starting a course of research at the Physical Chemical Laboratory, Cambridge. (*Signed by*) T. M. Lowry, E. K. Rideal, R. G. W. Norrish.

MANDAL, BIRENDRA KESHARY, Public Analyst, Jharia Mines Board of Health, Dhanbad, Bihar and Orissa, India. Bengalee Hindu. Public Analyst. First Class diploma in Industrial Chemistry, B.E. College, Sibpur, 1914. Tech. Chemist, The Cawnpore Cotton Mills, Ltd., 1914–15. Analytical and Manf. Chemist, Smith Stanistreet Co., Ltd., Calcutta, 1915–22. Public Analyst, Jharia Mines Board of Health, Dhanbad, since 1922. (*Signed by*) Surendra Nath Dey, Charles Forrester, K. N. Bagchi.

MATSUDA, HAMILTON RYOICHI, c/o Tokushima Technical College, Shikoku, Japan. Japanese. Lecturer in Chemistry since April 1923. (*Signed by*) Masumi Chikashigé, Yasuhiko Asahina, Junzo Shinoda.

MORTON, THOMAS HENRY, 2, Trinity Street, Langley, Birmingham. British. Research Student. B.Sc. with Honours in Chemistry. (*Signed by*) W. N. Haworth, H. D. K. Drew, E. L. Hirst.

MULLINGER, LESLIE WALLACE, 149, Fillebrook Road, Leytonstone, E. 11. British. Student at East London College (University of London). Inter B.Sc., London. Desires to receive the publications, to attend the meetings, and use the Library. (*Signed by*) E. E. Turner, R. J. W. Le Fèvre, D. C. Jones.

PAINTON, WILLIAM GEORGE, 17, Marlborough Road, Gunnersbury, London, W. 4. English. Technical Chemist. B.Sc. (Lond.), Hons. Chem. A.I.C. Works Manager and Chemist. Engaged in manufacture of Foods (Infant and Invalid). (*Signed by*) Charles Dorée, F. H. Lowe, J. C. Crocker.

PASCAL, ERIC, 68, Hadham Road, Bishop's Stortford, Herts. British. Assistant Master, Bishop's Stortford College. M.A. Cantab. (Nat. Sci. Tripos). Teaching Chemistry in Bishop's Stortford College since 1921. (*Signed by*) F. S. Young, E. H. Tripp, J. A. Aeschlimann.

PATRICK, WALTER A., Johns Hopkins University, Baltimore, Md., U.S.A. U.S.A. Professor of Chemistry. Ph.D., Göttingen. B.Sc., Syracuse, N.Y., U.S.A. Colloidal Chem., "Adsorption of Vapours," *J. Amer. Chem. Soc.*, **42**, **44**; *J. Phys. Chem.*, **25**, **29**; "Adsorption from Solution," *Trans. Inst. Chem. Eng.*, **15**; "Dielectric Constants, Rates of Gaseous Reactions, Osmotic Pressure," *Z. f. phys. Chem.* (Cohen Festscrift). (*Signed by*) F. G. Donnan, S. Barratt, C. W. Bonniksen.

POLLARD, ALFRED, Hulme Hall, Victoria Park, Manchester. British. Research Student. B.Sc., Honours Chem., 1st Class, m/c 1926. Research in Organic Chemistry under the supervision of Prof. R. Robinson, F.R.S., 1926— . "The Nitration of *s*-Methylthioguaiacol," *J.C.S.*, 1926, 3090; "Nitration of Benzylpiperidine," etc. (in the press). (*Signed by*) R. Robinson, A. Lapworth, E. W. Wignall, H. Raymond Ing.

ROACH, WILLIAM ARTHUR, Ford House, High Street, West Malling, Kent. British. Biochemist to the East Malling Research Station. B.Sc. (Lond.)., A.R.C.S., D.I.C., A.I.C. 1916–18, Assistant Chemist in the Chemical Warfare Dept. of the Ministry of Munitions; 1919–27, Assistant Research Chemist Rothamsted Experimental Station; at present Biochemist to the East Malling Research Station. I have published papers in the *Annals of Applied Biology*, *Biochemical Journal*, etc. (*Signed by*) H. F. Harwood, H. J. T. Ellingham, A. G. Pollard.

RÖRDAM, HANS NICOLAI KELLERMANN, Copenhagen K., Polyteknisk Laereanstalt, Sölvgade 83. Danish. Lecturer in Chemistry at the Royal Military High School. Assistant at the Chem. Laboratory of the Polytechnical Institute, Copenhagen. D.Sc. at the University of Copenhagen.

"Organic Oxonium Compounds," *J. Amer. Chem. Soc.*, 1915, **37**, 557; "Der Einfluss von Substituenten in *ortho-*, *meta-*, und *para*-Stellung auf die Affinität der Benzoësäure," *Z. für phys. Chemie*, 1921, **99**, 474. These two papers have also been published in the "Memoirs of the Royal Danish Society of Sciences." "Studies on Activity" (Dissertation for the degree of D.Sc., Copenhagen, 1925). Textbooks of Physical Chemistry (1925) and of Organic Chemistry (1927) for the senior classes of the Royal Military High School. (*Signed by*) Chr. Winther, Einar Biilmann, H. Baggesgaard Rasmussen.

SCOTT, ROLAND, River View, Middleton-One-Row, nr. Darlington. British. Technical Chemist. Three and a half years' Industrial Chemistry. Three years' Research Work. (*Signed by*) W. J. V. Ward, H. Sim Hirst, R. G. Franklin.

SHARP, GLADYS IRENE, 34, Woodhouse Road, Leytonstone, E. 11. British. Student at East London College from Sept. 1925. (*Signed by*) E. E. Turner, E. Roberts, A. Brewin.

SINGH, BABU LAL, The Shree Krishna Deshi Sugar Works, Jhusi, B. and N.W. Ry. P.O. Jhusi, Dist., Allahabad. Indian, Hindu. Industrial Chemist. Was Science teacher in the National Collegiate School, Chapra, for a year; Assistant Chemist in the Western India Prospecting Syndicate, Ltd., Cawnpore, for a year, where I worked on soap, oil, ink, and gur analysis; Industrial Chemist in several sugar factories in Behar and United Provinces for six years. Contributed several scientific articles in Indian monthly magazines. Associate of Sugar Technologists' Association of India. (*Signed by*) S. Dutt, N. R. Dhar, K. P. Chatterjee.

SMITH, HENRY GEOFFREY, 39, Headingley Mount, Headingley, Leeds. British. Research Student. 2nd Class Honours B.Sc., Leeds. Research Student at Leeds University. (*Signed by*) C. K. Ingold, J. W. Baker, C. W. Shoppee.

SMITH, JAMES ANDREW BUCHAN, 35, St. John's Road, Selly Park, Birmingham. British. Research Student in University of Birmingham, B.Sc., Honours in Chemistry (1st). (*Signed by*) W. N. Haworth, H. D. K. Drew, E. L. Hirst.

STOWELL, FLAXNEY PERCIVAL, 10, Grosvenor Mansions, Broad Walk, Buxton, Derbyshire. British. Research Chemist. B.Sc. (1st Class Hons. Chem.), Liverpool. Ph.D., Liverpool. As Aquarium Research Fellow of the Zoological Society of London, 1925–27: *Proc. Zool. Soc. London*, 1925, **82**, 141; *ibid.*, 1926, 245; *ibid.*, 1927, 19; *Jour. Marine Biological Assoc.*, 1927, **14**, 955; one still in printer's hands. McKeown and Stowell, *J.C.S.*, January, 1927, "The Vapour Pressures of Mixtures of (*a*) Methyl Acetate and Water, (*b*) Methyl Acetate, Sucrose, and Water." (*Signed by*) A. Eric J. Vickers, John W. Corran, A. McKeown.

TAYLOR, JOHN, 120, Hurlingham Road, Fulham, London, S.W. 6. English. Student. Hons. B.Sc. (Durham). Research Student at Armstrong College for one year; at present research student under Professor Bone. (*Signed by*) G. R. Clemo, R. D. Haworth, P. L. Robinson, K. N. Welch, Richard Raper.

THOMERSON, LILIAN GERTRUDE, 134, Colchester Road, Leyton, E. 10. Essex. British. B.Sc., London. Student at East London College 1923 onwards. Research Student in Organic Chemistry from 1927 (Sept.). (*Signed by*) E. E. Turner, E. Roberts, A. Brewin.

THOMPSON, HAROLD WARRIS, Trinity College, Oxford. English. Student in Chemistry, Oxford University. Hopes to take Part I, B.A. in June 1928. (*Signed by*) C. N. Hinshelwood, E. J. Bowen, H. Hartley, H. R. Raikes.

THORN, VERA MILLICENT, 37, Steade Road, Sheffield. British. Research

Student. University of Sheffield [Organic Chemistry Dept.]. B.Sc. (Special) Chemistry Honours II. 1926, Engaged on Research on Derivatives of Piperazine. (*Signed by*) T. S. Moore, M. Boyle, W. P. Wynne.

TIPPER, CLARENCE CYRIL, 6, Rochester Road, Southsea, Portsmouth. British. Certificated Teacher. B.Sc., London University. Reading for Hons. Chemistry (Special Degree, London) at Birkbeck College, London. (*Signed by*) Herbert C. Dane, Walter H. Watson, John Wilson.

TIPSON, ROBERT STUART, 111, Allesley Road, Coventry. British. Research Student. B.Sc., 1st Class Honours Chemistry (Birmingham). (*Signed by*) W. N. Haworth, H. D. K. Drew, E. L. Hirst.

TRAILL, RALPH CUTHBERT, Clare College, Cambridge. British. Student. M.Sc. (Melbourne). Lately Research Student, Melbourne. (*Signed by*) Harold A. Scarborough, W. A. Waters, R. P. Cook.

VEAZEY, WILLIAM REED, Case School of Applied Science, Cleveland, Ohio. United States of America. Professor of Chemical Engineering. A.B., Westminster College (Pa.), 1903. Ph.D., Johns Hopkins University, 1907. Member Board of Directors, Dow Chemical Company, Midland, Michigan. Author of following U.S. Patents on Magnesium and its Alloys and Metallic Sodium: 1,374,968; 1,375,330; 1,377,374; 1,374,968; 1,334,179; 1,334,193; 1,558,066; 1,515,082; 1,476,192. (*Signed by*) Olin F. Tower, J. L. R. Morgan, James Kendall.

WAHBI, AHMED KAMEL, 329, Gt. Western Street, Rusholme, Manchester. Egyptian. Third year (Honours) Chemistry Student, University of Manchester. I desire to receive the publications of the Society in order to keep in touch with the progress of research. (*Signed by*) Arthur Lapworth, Frederick Challenger, L. Klein, Alex. Robertson.

WARD, ANGUS FITZCHARLES HENDERSON, 7, Manor Street, Cambridge. British subject by birth. Research Student. B.A. (1st Class) (Cambridge). B.Sc. (1st Class) (London). Amy Mary Preston Read Scholar in the University of Cambridge and Holder of D.S.I.R. Research Grant. Late Scholar of Jesus College, Cambridge; Fellow of the Cambridge Philosophical Society. "On the Heat of Adsorption of Oxygen on Charcoal" (accepted but not yet published), by Ward and Rideal. (*Signed by*) Eric K. Rideal, W. H. Mills, T. M. Lowry.

WEBB, JOHN IVOR, 12, Third Avenue, Selly Park, Birmingham. British. Research Student, University of Birmingham. B.Sc., Honours in Chemistry (1st). (*Signed by*) W. N. Haworth, H. D. K. Drew, E. L. Hirst.

WHITTAM, RICHARD, 120, Walmersley Road, Bury, Lancashire. British. Research Student. Assistant in Research Dept. of British Dyestuffs Corp., 1920–27. Now doing research work (Chemistry) at Manchester University for Ph.D. Sitting for London External B.Sc. (Hons.), 1928. (*Signed by*) Arthur Lapworth, E. H. Rodd, Percy Chorley.

WILLIAMS, DAVID MATTHEW, "Cranbrooke," Bridge Street, Aberystwyth. British. Assistant Lecturer in Chemistry. B.Sc. (Wales). Ph.D. (Wales). 1924–27, Senior Chemistry Master, Ebbw Vale County School. 1927, Assistant Lecturer in Chemistry, University College of Wales, Aberystwyth. (*Signed by*) T. Campbell James, C. R. Bury, L. J. Hudleston.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

BARTON-HOBBS, GEORGE ERNEST, "Braemar," 236, Chelmsford Road, Durban, Natal, South Africa. English. Analytical Chemist, Natal Cane By-Products, Ltd., Merebank, Natal, South Africa. I.C.S. Diploma,

"Chemistry and Chemical Technology," in Durban, South Africa. Lab. Asst. Govt. Natal Herb. and Physiological Laboratory, Durban. Special sugar, soil, and general analysis, general laboratory and photography work, etc. Asst. Chem. Amatikulu Sugar Mill, Zululand. General Sugar and Mill. Post seven years, Chemist, Natal Cane By-Products, Ltd. Manufacturer, Natalite motor fuel, Alc., Abs., etc. Research work in fermentation, fertilizer from still refuse, motor fuels, etc. General analysis, etc. (*Signed by*) Chas. D. Golding.

BETTI, MARIO, Istituto di Chimica generale, R. Università, Bologna (Italy). Italian. Prof. of General Chemistry. Director of the Chem. Inst. Chem. Doctor (R. Univers., Pisa, 1897). Researches on general, physical and organic chemistry, published in *Gazzetta chimica italiana*, *Rendiconti R. Accad. Lincei*, etc., from 1897 to 1927. *J.C.S.*, 1916, **109**, 424–28. (*Signed by*) Arnaldo Piutti.

VAN DUIN, CONSTANT FREDERIK, 34, Nieuwe Gracht, Utrecht, Holland. Dutch. Ph.D., Utrecht (Holland), 1918. Formerly assistant for Organic Chemistry at the University of Utrecht, chemist at the munition factory at Zaandam, chief chemist of the chemical factory "Naarden" at Naarden, and Dutch Ramsay Fellow. Author of 35 papers in *Rec. trav. chim.*, *Chemisch Weekblad*, *J. Chem. Soc.*, *J. Amer. Chem. Soc.*, *Z. physik. Chemie*, and *Verslagen Kon. Akad. van Wetenschappen Amsterdam*. (*Signed by*) Ernest Cohen.

HUGHES, THOMAS ROBERT, 47, Colin St., West Perth, Australia. British. Industrial Chemist. Student Member Australian Chemical Institute. Four years Chemical Student, Perth Technical School. Five years Chief Chemist and Works Manager of Messrs. Plaimar, Ltd., Essential Oil Distillers, Perth, West Australia. Research work has been, and is being done, in connection with the above Firm on the chemical composition and commercial production of Australian Essential Oils, particularly Sandalwood Oil. (*Signed by*) Edward S. Simpson, Albert J. Simons.

LENZE, FRITZ, Berlin, Wilmersdorf, Eisenzahnstrasse No. 5. German (Deutsch). Director of the Chemisch-Technischen Reichsanstalt, Berlin, Jungfernheide, Postamt Plötzensee. Professor Dr. Besides the function of Director of the Chemisch-Technischen Reichsanstalt, author of several treatises, chiefly on explosives and on cellulose, all published in German scientific papers, viz.: (1) *Berichte der Deutschen chemischen Gesellschaft*, 1898, **31**, 68–90; (2) *Zeitschrift für das gesamte Schiess- u. Sprengstoffwesen*, **14**, 297, 315, 331, 346, 377, and 395; (3) *Journal für praktische Chemie*, **101**. (1) *J.C.S.*, 1898, **74**, i, 227; (2) (No reference to be found.); (3) 1921, **119**, i, 163. (*Signed by*) Robert Robertson.

LEVI, GIORGIO RENATO, Viale Romagna 37, Milano, Italy. Italian. Prof. of Physical Chemistry, University of Milan. Dr.chem. (Padova). Researches in physical, inorganic, and organic chemistry (Chemical applications of *X*-Rays, Chlorites, Dyestuffs). (*Signed by*) Giuseppe Bruni.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. III. Physikalisch-chemische Methoden, Teil B, Heft iv. Berlin 1927. pp. 595 to 720. ill. *M.* 7. (*Recd.* 9/1/28.) From the Publishers: Herren Urban & Schwarzenberg.

British Cotton Industry Research Association. Research in the cotton industry. A review of the work . . . up to the end of 1926 carried out under the direction of the late Arthur William Crossley. Edited by Robert Howson Pickard. Manchester [1927]. pp. xvi + 80. ill. (*Recd.* 17/12/27.)

From the Director.

Everest, Arthur Ernest. The higher coal-tar hydrocarbons. London 1927. pp. xiv + 334. 18*s.* net. (*Recd.* 13/1/28.)

From the Author.

Giua, Michele. Elementi di chimica organica con trattazione particolare della chimica di guerra. Torino 1928. pp. viii + 288. ill. *L.* 35. (*Recd.* 14/1/28.)

From the Publishers: Messrs. Rosenberg & Sellier.

Kam, E. J. van der. Tabellarische Übersicht der Naphtalinderivate. Auf Grundlage des Werkes: "Sur la constitution de la naphtaline et de ses dérivés," par Frédéric Reverdin et Emilio Noelting. 2 vols. Haag 1927. pp. xx + [458], x + 252. (*Reference.*) *fl.* 35.

From the Publisher: Heer Martinus Nijhoff.

Scientific and Industrial Research, Department of. *Building Research Board.* Report . . . for the period ended 31st December, 1926, etc. London 1927 +. (*Reference.*)

From the Director.

II. *By Purchase.*

Clayton, William. The theory of emulsions and their technical treatment. 2nd edition. London 1928. pp. xii + 284. ill. 15*s.* net. (*Recd.* 19/1/28.)

Clemen, Rudolf A. By-products in the packing industry. Chicago 1927. pp. xii + 410. ill. 20*s.* net. (*Recd.* 19/1/28.)

Findlay, Alexander. The phase rule and its applications. 6th edition. London 1927. pp. xvi + 326. ill. 10*s.* 6*d.* net. (*Recd.* 19/1/28.)

Fitch, William Edward. Mineral waters of the United States and American spas. Philadelphia 1927. pp. xvi + 800. ill. 35*s.* net. (*Recd.* 17/1/28.)

Gattefossé, R. M. Nouveaux parfums synthétiques. 2nd edition. Paris 1927. pp. 243. 35 *fr.* (*Recd.* 2/1/28.)

Jeancard, Paul. Les parfums: chimie et industrie. Paris 1927. pp. 387. ill. 80 *fr.* (*Recd.* 2/1/28.)

Morse, Withrow. Applied biochemistry. 2nd edition. Revised with the co-operation of Joseph M. Looney. Philadelphia 1927. pp. 988. ill. 32*s.* 6*d.* net. (*Recd.* 19/1/28.)

Noyes, Arthur Amos, and Bray, William Crowell. A system of qualitative analysis for the rare elements. New York 1927. pp. xii + 536. 21*s.* net. (*Recd.* 19/1/28.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, February 2nd, 1928, at 8 p.m., Professor H. Brereton Baker, C.B.E., D.Sc., F.R.S., President, in the Chair.

Certificates were read for the first time in favour of:

George Wilson Patton, B.Sc., 36, Arlington Street, Anlaby Road, Hull.
Donald Henry Richardson, Ph.D., M.Sc., A.I.C., 4, The Crossways, Onslow Village, Guildford.
Tiruvenkata Rajendra Seshadri, M.A., Chemical Department, The University, Manchester.
Alfred Tingle, B.Sc., Ph.D., Department of National Revenue, Ottawa.
Leonard Arthur Warren, 16, Bourne Hill, Palmers Green, N. 13.
Roy Basil Waters, 124, Kingsland Road, Plaistow, E. 13.
William Leonard Whiteley, B.Sc., 87, St. Mark's Road, Mitcham.
Richard Llewelyn Wilson, M.Sc., Gorphwysfa, Caersws, Montgomery.
Reginald Joseph Winterton, 30, Austin Street, King's Lynn.

The following papers were read:

"Some experiments on diffusion in solid metals." By J. W. Jenkin and C. H. Desch.

"The alkaloids of some Indian aconites: *Aconitum rotundifolium*, A. Balfourii, and *A. deinorrhizum*." By T. A. Henry and T. M. Sharp.

"The synthesis of *meso*-alkyl and *meso*-aryl anthracene derivatives. Part III." By E. de B. Barnett and J. W. Cook.

Ordinary Scientific Meeting, Thursday, February 16th, 1928, at 8 p.m., Professor H. Brereton Baker, C.B.E., D.Sc., F.R.S., President, in the Chair.

The President referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Herbert Edward Burgess	Feb. 15th, 1894.	Oct. 24th, 1927.
Richard Oxley Burland	Dec. 2nd, 1897.	Jan. 27th, 1928.
Henry Couldrey.....	June 16th, 1892.	Aug. 13th, 1927.

Mr. C. A. Waters was formally admitted a Fellow of the Chemical Society.

Certificates were read for the first time in favour of :

Sudhir Chandra Basu, M.Sc., 21, Cromwell Road, South Kensington, S.W. 7.
Frederick Frank Glasspool, B.Sc., Victoria College, Bath.
Alice Corfield Kellett, B.Sc., 103, Claremont Road, Pendleton, Manchester.
Spencer Claude Gascoine Moon, Medway, Amiens Street, Gladesville, N.S.W.
Edward William James Moore, B.Sc., A.I.C., 307, Blackburn Road, Haslingden, Rossendale, Lancs.
Charles Earl Mullin, M.Sc., Clemson College, South Carolina, U.S.A.
Walter Weston Webb, Ph.D., B.Sc., A.I.C., Fairmead Cottage, Spring Grove, Loughton.

A certificate has been authorised by the Council for presentation to ballot under Bye-Law I (2) in favour of :

Edward Charles Haddon, Medical Research Laboratories, Entebbe, Uganda.

Dr. J. G. F. Druce and Dr. J. L. Simonsen were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :

Stanley Baker, M.Sc., Ph.D.
Harold Hayden Barber, B.Sc., F.I.C.
George Ernest Barton-Hobbs.
Mario Betti, Dr.Chem.
Harold Graham Bott, B.Sc.
Reginald Bowsher, B.Sc.
Basil Butterworth, B.Sc.
Jessie Cattermole.
Bibhuti Bhuson Chaudhuri, M.Sc.
Jacob Davis Cohen, B.Sc., A.C.G.F.C.
Moses Leverock Crossley.
William Fraser Donald.
Constant Frederick Van Duin, Ph.D.
Tom Farrar.
Geoffrey William Fenton, B.Sc.
George William Ferguson.
James Flint, M.C.
Frank Lathe Gilbert, B.Sc.
Charles Frederick Goodeve, M.Sc.
Marion Gosset, B.Sc., A.R.C.S.
Edgar Beattie Grant.
Leslie George Groves, B.Sc.
Herbert Charles Gull, B.Sc.
Thomas Hagyard, B.Sc.
Horace Arthur Hampton, B.Sc.
Donald Holroyde Hay, B.Sc.
Clive Whelpton Holman, A.M.I.Mech.E.
Marshall Holmes, M.Sc.
Theodora Mary Holmes, B.Sc., A.R.C.S.
James Hood.
Miriam Ivy Horton.
Thomas Robert Hughes.
Arthur Jackson, B.Sc.
Robert Gilbert James, B.Sc., A.I.C.
Anantrao Ramchandra Kagal, B.A., B.Sc.
Herbert Davenport Kay, Ph.D., D.Sc.
Frank Eugene Lathe, B.A., M.Sc.
Kenneth Hugh Lauder, B.Sc.
Abraham Learner, B.Sc.
Fritz Lenze.
Alfred William Leonard, B.Sc.
Giorgio Renato Levi, Dr.Chem.
John Vaughan Loach, B.Sc.
John Longwell, M.Sc., A.I.C.
Arthur Bertram Edmund Lovett, B.Sc.
Charles George Lyons, B.A.
Birendra Keshary Mandal.
Hamilton Ryoichi Matsuda.
Thomas Henry Morton, B.Sc.
Leslie Wallace Mullinger.
William George Painton, B.Sc., A.I.C.
Eric Pascal, M.A.
Walter A. Patrick, B.S., Ph.D.
Alfred Pollard, B.Sc.

William Arthur Roach, B.Sc., A.R.C.S., A.I.C.
Hans Nicolai Kellermann Rordam, D.Sc.
Roland Scott.
Gladys Irene Sharp.
Babu Lal Singh.
Henry Geoffrey Smith, B.Sc.
James Andrew Buchan Smith, B.Sc.
Flaxney Percival Stowell, B.Sc., Ph.D.
John Taylor, B.Sc.
Lilian Gertrude Thomerson, B.Sc.
Harold Warris Thompson.
Vera Millicent Thorn, B.Sc.
Clarence Cyril Tipper, B.Sc.
Robert Stuart Tipson, B.Sc.
Ralph Cuthbert Traill, M.Sc.
William Reed Veazey, A.B., Ph.D.
Ahmed Kamel Wahbi.
Angus Fitzcharles Henderson Ward, B.A., B.Sc.
John Ivor Webb, B.Sc.
Richard Whittam.
David Matthew Williams, B.Sc., Ph.D.

The following papers were read :

"Studies in China wood oil. Part II. The oxidation of β-elæostearic glyceride." By R. S. MORRELL and S. MARKS.

"Cryoscopic evidence of compound formation in mixtures of organic liquids." By W. M. MADGIN, J. B. PEEL, and H. V. A. BRISCOE.

"The preparation and properties of selenophene and certain halogen derivatives of selenophene." By H. V. A. BRISCOE and J. B. PEEL.

"A further case of the spontaneous resolution of externally compensated mixtures." By L. ANDERSON and D. W. HILL.

ANNUAL GENERAL MEETING.

The Annual General Meeting will take place on Thursday, March 22nd, 1928, at 4 p.m., when the retiring President, Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., will deliver his address.

ANNIVERSARY DINNER.

The Anniversary Dinner of the Society will be held at the Hotel Victoria, King Edward VIIth Rooms, Northumberland Avenue, W.C. 2, on Thursday, March 22nd, 1928 (the day of the Annual General Meeting) at Seven for Half-past Seven o'clock.

The Presidents of the Belgian, Danish, Dutch, Finnish, Norwegian, and Swedish Chemical Societies, the President of the Union Internationale, and other distinguished guests have been invited by the Council to the Dinner, and it is hoped that there will be a large and representative gathering of Fellows present.

Tickets, price Twelve Shillings and Sixpence (12*s.* 6*d.*) each, including gratuities to waiters, can be obtained from the Assistant

Secretary, Chemical Society, Burlington House, Piccadilly, W.1. A remittance for the number of tickets required, made payable to S. E. Carr, must accompany each application.

List of Papers, or Abstracts thereof, received between January 19th and February 16th, 1928. .(This List does not include the titles of papers, or abstracts thereof, which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Polysaccharides. Part I. The structure of inulin." By W. N. HAWORTH and A. LEARNER.

"A new pipette." By H. N. RIDYARD.

"Silver nitrate concentration cells in acetonitrile and benzonitrile." By F. K. V. KOCH.

"The burning of carbon disulphide. Part II. The velocity of the uniform movement of flame in carbon disulphide–second combustible–air mixtures." By A. G. WHITE.

"The precipitation of cadmium sulphide from aqueous solutions of cadmium chloride in the presence of hydrochloric acid and other chlorides. Part II. Neutral salt effect." By S. KRISHNAMURTI.

"Some miscibility relations of acetic anhydride." By D. C. JONES and H. F. BETTS.

"Molecular volumes at absolute zero." By W. BILTZ.

"Proteolytic enzymes in brewers' yeast." By D. A. RUDDLE.

"Lead subacetate solution ('Goulard's extract') and its reaction with phenols." By C. S. GIBSON and E. MATTHEWS.

"The intermolecular condensation of acetylmethylanthranilic acid by means of phosphorus pentachloride and the formation of a complex *iso*cyanine dye." By I. M. HEILBRON, S. L. HOLT, and F. N. KITCHEN.

"Stereoisomerism in polycyclic systems. Part IV. Two stereoisomerides of 2 : 3 : 4 : 5 : 12 : 13-hexahydroquinindene." By W. H. PERKIN and S. G. P. PLANT.

"A new synthesis of 4-amino-3-hydroxyphenylarsinic acid." By I. E. BALABAN.

"Some properties and reactions of β-chloroethyl, β-cyanoethyl, and β-carbethoxyethyl toluene-*p*-sulphonates, and an extension of the Friedel–Crafts reaction." By G. R. CLEMO and E. WALTON.

"Equilibrium in binary systems composed of ethylenediamine and phenols." By N. A. PUSHIN and L. SLADOVICH.

"Benzoic esters and electronic affinities of radicals. Part I." By A. ZAKI.

"Constituents of *Myoporum lætum*, Forst. (The "Ngaio"). Part III. The oxide rings of ngaione, an isomeride of ngaiol, and a sesquiterpene monoxide." By F. H. MCDOWALL.

"The influence of groups and associated rings on the stability of certain heterocyclic systems. Part IV. The substituted butyro- and valero-lactones." By S. S. G. SIRCAR.

"Selenium oxyfluoride." By E. B. R. PRIDEAUX and C. B. COX.

"The nitration of mixed *m*-dihalogenobenzenes." By H. A. MAYES and E. E. TURNER.

"The competitive interaction of alkyl and aryl halides with magnesium." By H. W. RUDD and E. E. TURNER.

"The isomerism of the styryl alkyl ketones. Part IV. 4-Hydroxy- and some derivatives of 2-hydroxy-styryl alkyl ketones." By A. MCGOOKIN and D. J. SINCLAIR.

"The isomerism of the styryl alkyl ketones. Part V. 2-Hydroxy-styryl *tert.*-butyl, *iso*butenyl, and phenyl ketones." By A. MCGOOKIN and D. J. SINCLAIR.

"The constitution of irigenin and iridin. Part I." By W. BAKER.

"The condensation of certain aldehydes with ketones of the morphine group." By J. M. GULLAND.

"The mechanism of the degradation of fatty acids by mould fungi. Part I." By T. K. WALKER and P. D. COPPOCK.

"Nature of the alternating effect in carbon chains. Part XXV. Activation of extended conjugated systems." By J. W. BAKER.

"A test for caryophyllene." By D. T. GIBSON.

"The action of bromine water on certain olefinic acids." By J. READ and W. G. REID.

"Mobile-anion tautomerism. Part I. A preliminary study of the conditions of activation of the three-carbon system, and a discussion of the results in relation to the modes of addition to conjugated systems." By H. BURTON and C. K. INGOLD.

"Equilibrium in solutions. A note on 'the activity theory of reaction velocity.'" By W. F. K. WYNNE-JONES.

"The nature of the hydroxyl groups of hydroxyanthraquinones." By A. GREEN.

"The complex salts of bivalent platinum with $\alpha\beta\gamma$-triaminopropane." By F. G. MANN.

"On the chemical individuality of humulene." By A. C. CHAPMAN.

"Chloroamines as halogenating agents. Iodination by a chloroamine and an iodide." By A. E. BRADFIELD, K. J. P. ORTON, and I. C. ROBERTS.

"The action of cuprous cyanide and methyl iodide." By E. G. J. HARTLEY.

"The constitution of thebenine." By J. M. GULLAND and C. J. VIRDEN.

"The unsaponifiable matter from the oils of Elasmobranch fish. Part IV. The establishment of the structure of selachyl and batyl alcohols as monoglyceryl ethers." By I. M. HEILBRON and W. M. OWENS.

"Note on a volatile platinum compound." By R. C. MENZIES.

"Orientation effects in the diphenyl series. Part VI. The supposed isomerism of the dinitrotolidines." By R. J. W. LE FÈVRE and E. E. TURNER.

"Synthetical experiments in the aporphine group. Part II. A synthesis of bulbocapnine methyl ether." By J. M. GULLAND and R. D. HAWORTH.

"The system sodium–tin." By W. HUME-ROTHERY.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* First annual report, etc., Melbourne 1927+. (*Reference.*) From the Council.

BAILEY, GEORGE HERBERT, and SNELLGROVE, DOUGLAS ROSEBERY. Inorganic chemistry. Vol. II. Mainly metals. London 1928. pp. viii + 430. ill. 6*s.* 6*d.* net. (*Recd.* 24/1/28.) From the Publishers: University Tutorial Press.

BOLTON, EDWARD RICHARDS. Oils, fats, and fatty foods: their practical examination. A handbook for the use of analytical and technical chemists and manufacturers. With a chapter on vitamines by JACK CECIL DRUMMOND. Being a 2nd edition of "Fatty foods" by EDWARD RICHARDS BOLTON and CECIL REVIS. London 1928. pp. xvi + 416. ill. 30*s.* net. (*Recd.* 13/2/28.) From the Author.

CAMBRIDGE PHILOSOPHICAL SOCIETY. Proceedings. Vol. XX, etc. Cambridge 1920 +. (*For circulation.*) From Professor C. S. Gibson, O.B.E.

COMPTES-RENDUS DES TRAVAUX DU LABORATOIRE CARLSBERG. Tables des volumes I à XVI, 1876—1927. Copenhague 1927. pp. 69. (*Reference.*) 4*s.* 6*d.* net. From the Publisher: H. Hagerup.

FOLIA CLINICA CHIMICA ET MICROSCOPICA. Vol. I, etc. Bologna 1926 +. (*Reference.*) From the Biochemical Society.

JAPANESE JOURNAL OF MEDICAL SCIENCES. Transactions. II. Biochemistry. Published by the National Research Council of Japan. Vol. I, etc. Tokyo 1925 +. (*Reference.*)

From the Director.

ORGANIC SYNTHESES: an annual publication of satisfactory methods for the preparation of organic chemicals. Vol. VII. Edited by Frank C. Whitmore [and others]. New York 1927. pp. viii + 106. 7*s.* 6*d.* net. (*Recd.* 6/2/28.)

From the London Publishers: Messrs. Chapman & Hall.

RICE, FRANCIS OWEN. The mechanism of homogeneous organic reactions from the physical-chemical standpoint. New York 1928. pp. 218. ill. $5 net. (*Recd.* 31/1/28.)

From the Publishers: The Chemical Catalog Co. Inc.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. VI. Part vi. Berlin 1928. *M.* 10. (*Recd.* 6/2/28.)

From the Publishers: Herren Urban & Schwarzenberg.

WHEELER, EDWARD. The manufacture of artificial silk. London 1928. pp. xvi + 150. ill. 12*s.* 6*d.* net. (*Recd.* 30/1/28.)

From the Publishers: Messrs. Chapman & Hall.

II. *By Purchase.*

BERTHELOT, MARCELIN. Science et education. Discours et notices académiques. Paris 1901. pp. xii + 384. 3 *fr.* 50. (*Recd.* 2/2/28.)

BLYTH, ALEXANDER WYNTER, and BLYTH, MEREDITH WYNTER. Foods, their composition and analysis. 7th edition. By HENRY EDWARD COX. London 1927. pp. xxvi + 620. ill. 38*s.* net. (*Recd.* 16/2/28.)

BUSWELL, ARTHUR M. The chemistry of water and sewage treatment. New York 1928. pp. 362. ill. 29*s.* 6*d.* net. (*Recd.* 16/2/28.)

CAMERON, ALEXANDER THOMAS. A textbook of biochemistry for students of medicine and science. London 1928. pp. x + 462. ill. 15*s.* net. (*Recd.* 16/2/28.)

GERHARDT, CHARLES, Correspondance. Edited by MARC TIFFENEAU. Vol. II. Gerhardt et les savants Français 1842—1856. Paris 1925. pp. vi + 322. ill. 30 *fr.* (*Recd.* 6/2/28.)

GÜNTHERSCHULZE, ADOLF. Galvanische Elemente. (Monograph. angew. Elektroch. Vol. 48.) Halle (Saale) 1928. pp. viii + 184. ill. *M.* 15. (*Recd.* 2/2/28.)

HARROW, BENJAMIN. Eminent chemists of our time. 2nd edition. New York 1927. pp. xx + 472. ill. 13*s.* 6*d.* net. (*Recd.* 31/1/28.)

LÖWE, FRITZ. Optische Messungen des Chemikers und des Mediziners. Dresden 1925. pp. xi + 166. ill. *M.* 7.50. (*Recd.* 2/2/28.)

LORENZ, RICHARD. Das Gesetz der chemischen Massenwirkung. Seine thermodynamische Begründung und Erweiterung. Leipzig 1927. pp. x + 176. ill. *M.* 14.50. (*Recd.* 10/2/28.)

PEDDLE, CYRIL JAMES. Defects in glass. London 1927. pp. [x] + 206 + xiv. ill. 8*s.* 6*d.* net. (*Recd.* 25/1/28.)

POWELL, SHEPPARD T. Boiler feed water purification. New York 1927. pp. x + 364. ill. 20*s.* net. (*Recd.* 16/2/28.)

ROBERTS, JOHN. Coal carbonization, high and low temperature: a treatise on the principles and processes of manufacturing coke and semi-coke. London 1927. pp. xvi + 406. ill. 25*s.* net. (*Recd.* 24/1/28.)

SCHUMM, OTTO. Die spektrochemische Analyse natürlicher organischer Farbstoffe. Mit besonderer Berücksichtigung des Blutfarbstoffs, seiner medizinisch wichtigsten Abkömmlinge und einiger verwandter Pflanzenfarbstoffe. 2nd edition. Jena 1927. pp. xi + 290. ill. *M.* 25. (*Recd.* 8/2/28.)

SCHWYZER, JULIUS. Die Fabrikation der Alkaloide. Berlin 1927. pp. iv + 123. ill. *M.* 12. (*Recd.* 8/2/28.)

SOSMAN, ROBERT B. The properties of silica: an introduction to the properties of substance in the solid non-conducting state. New York 1927. pp. 856. ill. 52*s.* net. (*Recd.* 16/2/28.)

TROTMAN, SAMUEL RUSSELL, and THORP, E. L. The principles of bleaching and finishing of cotton. 3rd edition. London 1927. pp. x + 688. ill. 30*s.* net. (*Recd.* 24/1/28.)

[UNITED STATES] NATIONAL RESEARCH COUNCIL. Molecular spectra in gases. Report of the Committee on Radiation in Gases. Washington 1926. pp. 358. ill. 18*s.* net. (*Recd.* 11/1/28.)

UNITED STATES STEEL CORPORATION. Methods . . . for the sampling and analysis of gases. 3rd edition. Pittsburgh 1927. pp. xiv + 188. ill. 11*s.* net. (*Recd.* 22/12/27.)

WALKER, WILLIAM HULTZ, LEWIS, WARREN K., and MCADAMS, WILLIAM H. Principles of chemical engineering. 2nd edition. New York 1927. pp. xii + 770. ill. 27*s.* 6*d.* net. (*Recd.* 19/1/28.)

WHIPPLE, GEORGE CHANDLER. The microscopy of drinking water. 4th edition. Revised by GORDON MASKEW FAIR and MELVILLE CONLEY WHIPPLE. New York 1927. pp. xx + 586 + xix plates. 35*s.* net. (*Recd.* 19/1/28.)

WILSON, SAMUEL P. Pyroxylin enamels and lacquers. 2nd edition. [New York 1927.] pp. xvi + 254. ill. 18*s.* net. (*Recd.* 19/1/28.)

WOOD, WILLIAM P., and CORK, JAMES M. Pyrometry. New York 1927. pp. viii + 208. ill. 15*s.* net. (*Recd.* 16/2/28.)

CHNOLOGY DEPT.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Extra Meeting held on Thursday, February 23rd, 1928, at 8 p.m., Professor H. Brereton Baker, C.B.E., D.Sc., F.R.S., President, in the Chair.

Professor A. Fowler, F.R.S., delivered his Lecture entitled "Spectra and Atoms." A vote of thanks to the Lecturer, proposed by the Rt. Hon. Lord Rayleigh, F.R.S., and seconded by Professor H. E. Armstrong, F.R.S., was carried with acclamation, Professor Fowler making acknowledgment.

Ordinary Scientific Meeting, Thursday, March 1st, 1928, at 8 p.m., Professor H. Brereton Baker, C.B.E., D.Sc., F.R.S., President, in the Chair.

The President referred to the loss, sustained by the Society, through death on December 28th, 1927, of Mr. Charles James Waterfall, who was elected a Fellow on November 16th, 1882.

The following list of nominations for vacant places on the Council was read from the Chair:

President (one vacancy): Jocelyn F. Thorpe.
Treasurer (one vacancy): T. Slater Price.
Secretary (one vacancy): T. S. Moore.
Vice-Presidents who have filled the office of President (three vacancies): H. Brereton Baker, William H. Perkin, and Sir James Walker.
Vice-Presidents who have not filled the office of President (two vacancies): William H. Mills, James C. Philip.

Ordinary Members of Council:

(*a*) Town Members, *i.e.* those resident within 50 miles of Charing Cross (six vacancies): William A. Bone, Harold King, John L. Simonsen, Samuel Sugden, Henry Terrey, and Martha A. Whiteley.

(*b*) Country Members, *i.e.* those resident beyond 50 miles from Charing Cross (two vacancies): WILLIAM M. CUMMING, NEVIL V. SIDGWICK.

The following were formally admitted Fellows of the Chemical Society: J. Masson Gulland, L. W. Mullinger, T. M. Holmes, M. Gosset, J. W. T. Jones.

Certificates were read for the first time in favour of:

Frank Bryans, M.Sc.Tech., 14, Church Street, Pendlebury, Manchester.
Julian Paul Fraser, c/o The Burmah Oil Co., Ltd., Syriam, Burma.
John Gaius Ashwell Griffiths, B.A., A.I.C., Gable Beach, Coppice Avenue, Great Shelford, Cambridge.
Chuan-Ling Liang, B.A., M.Sc., 17, West Compound, Tsing Hua University, Peking.
Charles Edward Leslie Lucas, A.I.C., 27, Park Hill, Ealing, W. 5.
Glyn Owen, M.Sc., Dalton Hall, Victoria Park, Manchester.
Alex Rae, The Trees, Thingwall Road, Wavertree, Liverpool.
Reginald Harvey Spiller, A.R.C.S., A.I.C., Stonewall, Limpsfield, Surrey.

The following papers were read:

"The complex salts of bivalent platinum with $\alpha\beta\gamma$-triaminopropane." By F. G. MANN.

"The constitution of thebenine." By J. M. GULLAND and C. J. VIRDEN.

"Properties of conjugated compounds. Part V. The constitution of the sodio-esters derived by the Michael reaction as related to the additive process." By E. H. FARMER and C. D. LANGFORD.

"Properties of conjugated compounds. Part VI. The hydrogenation of certain extended heterogeneous systems." By J. T. EVANS and E. H. FARMER.

Ordinary Scientific Meeting, Thursday, March 15th, 1928, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
John F. V. Isaac	Dec. 15th, 1892.	Dec. 21st, 1927.
James Taylor	June 17th, 1880.	Dec. 14th, 1927.

The following were formally admitted Fellows of the Chemical Society: Wm. G. Painton, J. Cattermole, R. A. Morton.

Certificates were read for the first time in favour of :

Alfred Ernest Barratt, White House, Hawthorn Drive, Evington, Leicester.
Henry Scott Buckland, Jesus College, Cambridge.
Bertrand Stockdale Clarke, 62, Algers Road, Loughton.
Donald Vernon Ivins, No. 208 Squadron, Royal Air Force, H.Q. Cairo Brigade, Helwân, Cairo.
Ralph Oliver Phillips, M.Sc., Forestal Central Laboratories, Harpenden.
Vaidyanathier Ramaswami, M.Sc., 18, Luxembourg Gardens, W. 6.
Devanahalli Krishna Rao, B.Sc., c/o The Commonwealth Trust Ltd., Calicut P.O., India.

Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) in favour of :

Yuoh Fong Chi, Yale University, New Haven, U.S.A.
Frederick Hardy, Windyridge, Curepe, Trinidad.

The following papers were read :

"Mobile-anion tautomerism. Part I. A preliminary study of the conditions of activation of the three-carbon system, and a discussion of the results in relation to the modes of addition to conjugated systems." By H. Burton and C. K. Ingold.

"Studies of dynamic isomerism. Part XXVII. The absorption-spectra of prototropic compounds. Physical properties of the enolic and ketonic forms of benzoylcamphor." By T. M. Lowry, C. A. H. MacConkey, and H. Burgess.

"The parachor and chemical constitution. Part IX. Boron compounds." By J. J. Etridge and S. Sugden.

"Observations on the passivity of metals." By E. S. Hedges.

List of Papers, or Abstracts thereof, received between February 16th and March 15th, 1928. (This List does not include the titles of papers, or abstracts thereof, which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Internal equilibrium in liquid sulphur. Part I." By D. L. Hammick, W. R. Cousins, and E. J. Langford.

"The ring structure of sugars. The isolation of a new form of lyxose." By W. N. Haworth and E. L. Hirst.

"The condensation of chloral with substituted phenols." By F. D. Chattaway and F. Calvet.

"The reduction of selenious acid." By L. M. Clark.

"Some dinitroethylbenzenes." By O. L. Brady, J. N. E. Day, and P. S. Allam.

"Imide ring closure in derivatives of diketosuccinic acid phenylosazone." By F. D. Chattaway and W. G. Humphrey.

"The chlorination of anilides. *N*-Chlorination and *C*-chlorination as simultaneous side reactions." By K. J. P. Orton, F. G. Soper, and G. Williams.

"The photodecomposition of triphenylmethyl." By S. T. Bowden and W. J. Jones.

"Cyclic disulphides derived from diphenyl." By H. J. Barber and S. Smiles.

"A method for the photographic examination of moving flames." By A. G. White.

"Conversion of hydroaromatic into aromatic compounds. Part II. Action of bromine on 5-chloro- and 5-bromo-1-phenyl-Δ^4-*cyclo*hexen-3-one." By L. E. Hinkel and D. H. Hey.

"Equilibrium in electrolyte solutions and the reaction velocity equation." By F. G. Soper.

"The action of nitrous acid on amino-compounds. Part I. Methylamine and ammonia." By T. W. J. Taylor.

"Equilibrium diagram of the system antimony–arsenic." By Q. A. Mansuri.

"The influence of structure on the keto-enol change. Part I. The velocity of enolisation of some substituted amides of aceto-acetic acid." By R. H. Spiller and R. W. West.

"On the oxidation of *n*-hexane." By M. Brunner and E. K. Rideal.

"Some experiments in intensive drying." By R. H. Purcell.

"The action of aniline on *d*-glutamic acid." By W. H. Gray.

"The tautomerism of *cyclo*pentadienes. Part I. Some derivatives of methyl*cyclo*pentadiene." By F. R. Goss and C. K. Ingold.

"Acid and salt effects in catalysed reactions. Part XIII. Inert salt effects in the catalytic action of acids." By H. M. Dawson and A. Key.

"Reactions of carbohydrazide. Part II." By A. M. Munro and F. J. Wilson.

"The determination of volatile matter in coke." By F. J. Eaton and S. Pexton.

"The chlorination of anilides. Part IV. The significance of velocity measurements in relation to the problem of benzene substitution." By A. E. Bradfield and B. Jones.

"The constitution of phenolphthalein. Part I. Preparation of some compounds of the phthalein type." By H. Lund.

"The hypothesis of valency-deflection." By C. K. Ingold and J. F. Thorpe.

"Ionic equilibrium in colloidal solutions." By H. D. Murray.

"The conductivity of copper hydrosols." By H. D. Murray.

"The pectin and hemicelluloses of the flax plant." By S. T. HENDERSON.

"The preparation of 4 : 4′-dinitrobenzil." By F. D. CHATTAWAY and E. A. COULSON.

"On active nitrogen. Part V. The decay of the nitrogen afterglow." By E. J. B. WILLEY.

"The chemistry of polycyclic structures in relation to their homocyclic unsaturated isomerides. Part IX. The effect of the *spirocyclo*pentane grouping on the five-carbon intra-annular tautomeric nucleus." By F. R. Goss.

"Some thiazole derivatives. Part II." By H. W. STEPHEN and F. J. WILSON.

"A quantitative study of the oxidation of methyl oleate and elaidate by hydrogen peroxide in presence of acetic acid." By T. P. HILDITCH and C. H. LEA.

"Optical activity and the polarity of substituent groups. Part VIII. Growing chain effects and the ortho-effect in benzoic esters." By H. G. RULE, W. HAY, and J. PAUL.

"The mechanism of tautomeric interchange and the effect of structure on mobility and equilibrium. Part II. Ring-chain tautomerism in its relation to the mutarotation of the sugars." By J. W. BAKER.

"The reaction of bromine with aliphatic acids. Part II. The relative speeds of bromination of acetyl bromide and acetyl chloride." By H. B. WATSON.

"The condensation of ketones with ethyl acetoacetate." By L. G. JUPP, G. A. R. KON, and E. H. LOCKTON.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. I. Chemische Methoden, Teil 2, 2 Hälfte, Heft ii. Berlin 1928. pp. 1339 to 1968. ill. *M.* 32. (*Recd.* 27/2/28.) From the Publishers : Herren Urban & Schwarzenberg.

FRIEND, JOHN NEWTON. [Editor.] A text-book of inorganic chemistry. Vol. VIII. The halogens and their alloys. By GEOFFREY MARTIN and ERNEST AUGUSTUS DANCASTER. London 1915. pp. xviii + 338. ill. (*For circulation.*)

From Dr. J. Newton Friend.

INSTITUT PHYSICO-CHIMIQUE. Annales. Vol. I, etc. Petrograd [later, Leningrad] 1919+. [In Russian.] (*Reference.*)

From the Institute.

PHYSICS IN INDUSTRY. Lectures delivered before the Institute of Physics. Vol. IV. By WALTER MAKOWER and BERNARD A. KEEN. Vol. V. By HARRY EGERTON WIMPERIS and FRANK EDWARD SMITH. London 1926–27. pp. 64, 54. ill. (*Reference.*) 3*s.* and 2*s.* 6*d.* net. From the Institute of Physics.

SCHIMMEL & Co. Semi-annual report. 26 Reports to complete Library set. New York 1896–1910. (*Reference.*) From Mr. C. Sordes Ellis.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Building Research.* Building Science Abstracts. Vol. I (*New Series*), etc. London 1928+. (*Reference.*) From the Department.

THORMANN, KURT. Destillieren und Rektifizieren. (Chemische Technologie in Einzeldarstellungen.) Leipzig 1928. pp. viii + 114. ill. *M.* 14. (*Recd.* 3/3/28.) From the Publisher: Herr Otto Spamer.

TIMMERMANS, JEAN. La notion d'espece en chimie. Paris 1928. pp. iv + 134. ill. (*Recd.* 28/2/28.) From the Publishers: MM. Gauthier-Villars et Cie.

II. *By Purchase.*

AMERICAN GAS ASSOCIATION. Report of chemical committee—1926. "Recent progress of science in relation to the gas industry." New York. (*Reference.*) 7*s.* 6*d.* net.

DONATH, EDUARD. Die Chemie der Ziegelmauerwerkes. (Sammlung Vol. XXX.) Stuttgart 1928.

DOWLING, R. N. Sugar beet and beet sugar. London 1928. pp. x, 5 to 278. ill. 15*s.* net. (*Recd.* 15/3/28.)

HANDBUCH DER PHYSIK. Edited by HANS GEIGER and KARL SCHEEL. Vol. XII. Theorien der Elektrizität. Elektrostatik. Edited by WILHELM WESTPHAL. Berlin 1927. pp. viii + 564. ill. *M.* 49. (*Recd.* 2/3/28.)

—— —— Vol. XIII. Elektrizitätsbewegung in festen und flüssigen Körpern. Edited by WILHELM WESTPHAL. Berlin 1928. pp. viii + 672. ill. *M.* 58. (*Recd.* 2/3/28.)

HOLMES, HARRY N. Laboratory manual of colloid chemistry. 2nd edition. New York 1928. pp. xviii + 228. ill. 15*s.* net. (*Recd.* 15/3/28.)

HUDLESTON, LAWSON JOHN. Chemical affinity. London 1928. pp. viii + 138. ill. 7*s.* 6*d.* net. (*Recd.* 15/3/28.)

KOFLER, LUDWIG. Die Saponine. Wien 1927. pp. x + 278. ill. *M.* 20. (*Recd.* 6/3/28.)

MULLIN, CHARLES E. Acetate silk and its dyes. [New York 1927.] pp. 474. ill. 26*s.* net. (*Recd.* 22/2/28.)

MURRAY, BENJAMIN LINDLEY. Standards and tests for reagent and C. P. chemicals. 2nd edition. [New York 1927.] pp. xiv+ 560. (*Reference.*) 25*s.* net.

PHARMACEUTICA ACTA HELVETIAE. Wissenschaftliche Beilage zur Schweizerischen Apotheker-Zeitung. Year I, etc. Zürich 1926+. (*Reference.*)

PRYDE, JOHN. Recent advances in biochemistry. London 1928. pp. x + 380. ill. 12*s.* 6*d.* net. (*Recd.* 15/3/28.)

RUZICKA, LEOPOLD. Über Konstitution und Zusammenhänge in der Sesquiterpenreihe. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XIX.) Berlin 1928.

STARK, JOHANNES. Die Axialität der Lichtemission und Atomstruktur. Berlin 1927. pp. xii + 124 + 11 plates. ill. *M.* 6. (*Recd.* 12/3/28.)

WILSON, HEWITT. Ceramics. Clay technology. New York 1927. pp. xiv + 296. ill. 20*s.* net. (*Recd.* 16/3/28.)

WOLFF, HANS. Die Lösungsmittel der Fette, Öle, Wachse und Harze. (Monographien . . . der Fett-Chemie, Vol. I.) 2nd edition. Stuttgart 1927. pp. xvi + 270. ill. *M.* 17.50. (*Recd.* 12/3/28.)

III. *Pamphlets.*

AUROUSSEAU, M. Analyses of three Australian rocks. (From the *Proc. Linnean Soc. New South Wales*, 1926, **51**.)

BERNER, ENDRE. A contribution to the thermochemistry of organic compounds. (From the *Arch. Math. Naturvidenskab.*, 1926, **B 39**.)

BOYD, JAMES. The estimation of dust in mine air on the Witwatersrand. (From the *J. S. African Inst. Eng.*, 1928, **26**.)

CLARK, WILLIAM MANSFIELD, COHEN, BARNETT, and SULLIVAN, MICHAEL XAVIER. Studies on oxidation-reduction. XII. A note on the Schardinger reaction. (In reply to Kodama.) (*U.S. Public Health Reports*, 1927, Supplement No. 66.)

CLARKE, FRANK WIGGLESWORTH. Biographical memoir. Edward Williams Morley, 1838–1923. (From the *Mem. Nat. Acad. Sci.*, 1927, **21**.)

COLLIE, JOHN NORMAN. A century of chemistry at University College. London 1927. pp. 35.

GIBSON, CHARLES STANLEY, and SODEAU, WILLIAM HORACE. The use of plaster of Paris and allied substances for dental models. Preliminary note. (From the *British Dental J.*, 1927.) ill.

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. Chemists and dividends. By S. M. GLUCKSTEIN. London 1927. pp. 24.

—— The chemist in the photographic industry. By OLAF FREDERICK BLOCH. London 1927. pp. 18.

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. Jubilee celebration, 14th—15th December, 1927. pp. 53. ill.

JERSEY. Rapport de l'analyste officiel pour l'année 1926. Jersey 1927. pp. 19.

KOGERMAN, PAUL NICOLAI. The oil-shale industry of Estonia. Tartu 1927. pp. 40. ill.

MEDICAL RESEARCH COUNCIL. Special Report Series, No. 117. The toxaemias of pregnancy: a clinical and biochemical study. By JOHN NORMAN CRUICKSHANK, JOHN HEWITT, and KATHARINE LAMONT COUPER. London 1927. pp. 128.

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 37. The estimation of firedamp: flame caps. By C. S. W. GRICE and DONALD WHITLEY WOODHEAD. London 1927. pp. 8 + 6 plates.

—— —— Paper No. 38. The pressures produced on blowing electric fuse links. By G. ALLSOP and RICHARD VERNON WHEELER. London 1927. pp. 52. ill.

—— —— Paper No. 39. The pressures produced by electric arcs in closed vessels. By G. ALLSOP and RICHARD VERNON WHEELER. London 1927. pp. 14. ill.

—— —— Paper No. 40. The lighting power of flame safety-lamps. By RICHARD VERNON WHEELER and DONALD WHITLEY WOODHEAD. London 1927. pp. 66. ill.

MINISTRY OF AGRICULTURE AND FISHERIES. A report on an investigation into the desiccation of sugar beet and the extraction of sugar, with a note on the treatment of sugar beet effluents. By B. J. OWEN. London 1927. pp. 84. ill.

MOIR, JAMES. Colour and chemical constitution. Part XXI. A study of methyl derivatives of the phenolphthaleins. Part XXII. Dicyclic azomethines and their congeners. (From the *Trans. Roy. Soc. S. Africa*, 1927, **14**.)

MORLEY, EDWARD WILLIAMS. *See* CLARKE, FRANK WIGGLESWORTH.

PHILLIPS, MAX, CLARK, WILLIAM MANSFIELD, and COHEN, BARNETT. Studies on oxidation-reduction. XI. Potentiometric and spectrophotometric studies of Bindschedler's green and toluylene blue. (*U.S. Public Health Reports*, 1927, Supplement No. 61.)

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Building Research.* Bulletin No. 2. Pozzolanas. By ALFRED DENYS COWPER and FRANK LAWRENCE BRADY. London 1927. pp. iv + 10.

—— —— Special Report No. 10. Slag, coke breeze and clinker as aggregates. By FREDERICK MEASHAM LEA and FRANK LAWRENCE BRADY. London 1927. pp. vi + 22. ill.

CHNOLOGY DEPT.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

THE Anniversary Dinner of the Chemical Society was held at the Hotel Victoria (Edward VII Rooms) on Thursday, 22nd March, 1928, at 7 for 7.30 p.m.; the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., was in the Chair, and the following Fellows and guests, numbering 234, were present:

Abbott, Miss A.
Armstrong, Miss N.
Ashby, E.
Austin, Bertram.
Austin, Mrs. Bertram.
Baker, Miss Audrey.
Baker, H. Brereton, C.B.E., F.R.S., *Past-President.*
Baker, Mrs. H. Brereton.
Baker, S.
Bedson, P. Phillips.
Bedson, Mrs. S. Phillips.
Bennett, Miss D. M.
Bolton, E. R.
Bolton, Mrs. E. R.
Bowsher, R.
Bramley, A.
Brewer, F. M.
Briggs, Frank R.
Briggs, Mrs. Frank R.
Briggs, Harold, M.P.
Briggs, Mrs. Harold.
Burch, W. J. N.
Cain, Miss E.
Caney, Mrs. J. G.
Carlton, Miss M.
Carr, Francis H., C.B.E., *President, The Society of Chemical Industry.*
Carr, Mrs. F. H.
Carr, S. E., *Assistant Secretary.*
Carr, Mrs. S. E.
Chapman, A. W.
Chapman, Mrs. A. W.
Chattaway, F. D., F.R.S.
Chelmsford, The Rt. Hon. Viscount, G.C.S.I., G.C.M.G., G.C.I.E., G.B.E.
Clifford, F. W., *Librarian.*
Coates, J. E., O.B.E.
Cohen, Ernst, For.Mem.R.S., *President, Union Internationale de la Chimie Pure et Appliquée, and also representing the Nederlandsche Chemische Vereeniging.*
Cooper, C. J. A.
Corder, B. J.
Corder, Mrs. B. J.
Crowther, E. M.
Crowther, Mrs. E. M.
Daily Telegraph.
Desch, C. H., F.R.S., *President, The Faraday Society*
Dicksee, Sir Frank, K.C.V.O., *President, The Royal Academy of Arts.*
Donald, Miss G. H.
Donnan, F. G., C.B.E., F.R.S., *Foreign Secretary.*
Donnan, Miss J. E.
Drummond, J. C.
Drummond, Mrs. J. C.
Dyer, B.
Dyer, Mrs. B.
Eccott, E. N.
Edgerton, P.
Edgerton, Mrs. P.
Ehrhardt, Ernest F.
Ehrhardt, Mrs. Ernest.
Eldridge, A. A.

Eldridge, Mrs. A. A.
Ellingham, H. J. T.
Emeléus, H. J.
Ende, C. L. von.
Ewbank, Miss E. K.
Farmer, E. H.
Fass, E.
Findlay, A.
Fitzmaurice, R., R.N., D.S.O., *Vice-President, Chemical Warfare Committee.*
Forbes, C. M., R.N., D.S.O., *Director of Naval Ordnance.*
Forster, Miss E.
Fox, J. J., O.B.E.
Freeth, F. A., O.B.E., F.R.S.
Gamble, F. W.
Gibb, Sir Alexander, G.B.E., C.B., *President, The Institution of Chemical Engineers.*
Gibson, C. S., O.B.E., *Secretary.*
Gilling, C.
Gillman, Lt.-Gen. Sir Webb, K.C.B., K.C.M.G., D.S.O., *Master-General of the Ordnance.*
Goggs, A. B.
Gray, W. H.
Gregory, Sir Richard.
Gulland, J. Masson.
Gulland, Mrs. J. Masson.
Hamer, F. E.
Hamer, Miss F. M.
Hamer, J. C.
Hamer, S. H.
Haworth, W. N.
Henry, T. A.
Henry, Mrs. T. A.
Hewitt, J. T., F.R.S.
Hill, Charles A., *Chairman, The Association of British Chemical Manufacturers.*
Hinchley, J. W.
Hinks, E., M.B.E., *President, Society of Public Analysts.*
Hodgkin, A. E., M.C.
Hodgkin, Mrs. A. E.
Holland, Sir Thomas H., K.C.S.I., K.C.I.E., F.R.S., *Rector, The Imperial College of Science and Technology.*
Holmberg, Bror A. L., *President, Kemistsamfundet, Stockholm.*
Hooker, A. H.
Hooper, D.
Hope, E.
Hunter, R. F.
Ingold, C. K., F.R.S.
James, T. Campbell.
Jarmay, Sir John G., K.B.E.
Jones, Miss E. Cecil.
Jones, G. Cecil.
Jowett, H. A. D.
Keen, W. B.
Kenyon, J.
King, H.
King, Mrs. H.
Kitasato, Z.
Komppa, Gustav, *President, Soumalaisten Kemistien Seura, Helsingfors.*
Kon, G. A. R.
Kon, Mrs. G. A. R.
Lapworth, A., F.R.S.
Lawrence, Sir William, Bart., J.P.
Lefebure, Victor.
Lefebure, Mrs. Victor.
Le Pla, Miss M.
Lessing, R.
Lowndes, J.
Lowry, T. M., C.B.E., F.R.S.
McCombie, H., D.S.O., M.C.
Maclean, Mrs. I. S.
Marlow, G. S. W.
Menzies, R. C.
Menzies, Mrs. R. C.
Micklethwait, Miss F. M. G., M.B.E.
Micklethwait, R. G.
Mitchell, A. D., *Assistant Editor.*
Mitchell, Mrs. A. D.
Mitchell, F. G.
Moller, Miss N.
Mond, The Rt. Hon. Sir Alfred M., Bart., M.P., *President, The Institute of Fuel.*
Mond, Emile.
Moore, T. S., *Secretary.*
Moore, Mrs. T. S.
Morgan, G. T., O.B.E., F.R.S.
Morris, H. J.
Murakami, S.
Nielsen, Harald.
Nielsen, Mrs. Harald.
Nodzu, R.
Page, H. J., M.B.E.
Palmer, R.E., O.B.E., *President, The Institution of Mining and Metallurgy.*

Paravicini, C. R., *Minister for Switzerland.*
Pearson, G. E.
Peel, W. R., D.S.O.
Perkin, A. G., F.R.S.
Perkin, W. H., F.R.S., *Past-President.*
Philip, J. C., O.B.E., F.R.S., *Vice-President.*
Philip, Mrs. J. C.
Philip, W. E.
Phillips, H.
Plenderleith, H. J., M.C.
Plenderleith, Mrs. H. J.
Plimmer, R. H. A.
Pollitt, G. P., D.S.O.
Pope, Sir William J., K.B.E., F.R.S., *Past-President.*
Powell, Mrs.
Press Association.
Price, T. Slater, O.B.E., F.R.S., *Treasurer.*
Price, Mrs. T. Slater.
Purves, T. F., O.B.E., *Vice-President, The Institution of Electrical Engineers.*
Pyman, F. L., F.R.S.
Pyman, Mrs. F. L.
Randerson, W.
Randerson, Mrs. W.
Rideal, E. K., M.B.E.
Rintoul, W., O.B.E.
Rippon, C., J.P.
Rippon, Mrs. C.
Rippon, Miss D. M. L.
Robertson, Sir Robert, K.B.E., *Vice-President.*
Robinson, R., F.R.S., *Vice-President.*
Robinson, Mrs. R.
Rowe, F. M., *Representative of the Society of Dyers and Colourists.*
Rowlands, M. J.
Rutherford, Sir Ernest, O.M., *President, The Royal Society.*
Saastamoinen, A. H., *Minister for Finland.*
Scott, Alexander, F.R.S., *Past-President.*
Scott, Henderson.
Scott, Mrs. Henderson.
Scott, W. D.
Sharp, T. M.
Sharp, Mrs. T. M.
Shayler, Miss W.
Sidgwick, N. V., F.R.S.
Simonsen, J. L.
Simonsen, Mrs. J. L.
Skinner, Herbert, *President, The Pharmaceutical Society.*
Smethurst, A. F.
Smith, Clarence, *Editor.*
Somervell, D. B.
Soper, F. G.
Spencer, J. F.
Spencer, L. J., F.R.S.
Spencer, Mrs. L. J.
Spicer, E. H.
Stubbs, G., C.B.E.
Stubbs, Mrs. G.
Sugden, S.
Suginome, H.
Thomas, R. N. Garrod.
Thorpe, Mrs.
Thorpe, J. F., C.B.E., F.R.S., *President.*
Thorpe, Mrs. J. F.
Thorpe, W. B.
Thorpe, Mrs. W. B.
Thorpe, W. G.
Threlfall, Sir Richard, G.B.E., F.R.S.
The Times.
Tinkler, C. K.
Tinkler, Mrs. C. K.
Tizard, H. T., C.B., F.R.S., *Secretary, Department of Scientific and Industrial Research.*
Treadwell, W. D., *President, Société Suisse de Chimie.*
Treadwell, Mrs. W. D.
Trench, E. F. C., C.B.E., *President, The Institution of Civil Engineers.*
Troup, Sir Edward, K.C.B., K.C.V.O., *Chairman, Safety in Mines Research Board.*
Tunstall-Behrens, B.
Tunstall-Behrens, Mrs. B.
Turner, Miss E. G.
Wahl, W., *Vice-President, Finska Kemistsamfundet, Helsingfors.*
Warren, F. L.
Warren, H. Gordon.
Warren, Mrs. H. Gordon.
Waechter, Lady.
Whiteley, Miss M. A., O.B.E.
Widdows, Miss S. T.
Williams, G.

Williams, W. J.
Wood, Miss F. M.
Wynne, Miss D. P.
Wynne, W. P., F.R.S., *Past-President.*
Yeoman, E. W.

The following is a list of the Toasts proposed :—

1. The King.

2. The Queen, the Prince of Wales, and the other Members of the Royal Family.

By The Right Honourable VISCOUNT CHELMSFORD, G.C.S.I., G.C.M.G., G.C.I.E., G.B.E. :—

3. "The Chemical Society," coupled with the name of the President.

By SIR WILLIAM J. POPE, K.B.E., D.Sc., F.R.S., Past-President :—

4. "International Chemistry," coupled with the names of :

(*a*) Professor DR. ERNST COHEN, For.Mem.R.S., President, Union Internationale de la Chimie Pure et Appliquée, and representing the Nederlandsche Chemische Vereeniging.

(*b*) Professor DR. BROR A. L. HOLMBERG, President, Kemistsamfundet, Stockholm.

(*c*) Professor DR. W. D. TREADWELL, President, La Société Suisse de Chimie.

(*d*) Professor W. WAHL, Vice-President, Finska Kemistsamfundet, Helsingfors.

By Professor F. G. DONNAN, C.B.E., D.Sc., F.R.S., Foreign Secretary :—

5. "The Guests," coupled with the names of :

(*a*) SIR FRANK DICKSEE, K.C.V.O., D.C.L., President of the Royal Academy of Arts.

(*b*) Monsieur C. R. PARAVICINI, Minister for Switzerland.

(*c*) The Right Honourable SIR ALFRED M. MOND, Bart., M.P.

After the Loyal Toasts had been honoured, VISCOUNT CHELMSFORD proposed the toast of "The Chemical Society," and said that he belonged to the unfortunate age when the place of science in a liberal education was not sufficiently appreciated and the Science master was a figure of fun. When he went to Winchester in 1881 there was no laboratory in the College, nor did he remember any practical instruction in science. The forty or more years which had passed since then had produced a complete revolution

in the outlook towards scientific teaching. That revolution was due to constant pressure exerted by such a Society as the Chemical Society on public opinion.

Viscount Chelmsford referred to the fact that he was President of the Miners' Welfare Fund, which had contributed so much towards the endowment of research. The achievements of chemistry afforded that benefit to the common life which he who runs might read.

The PRESIDENT, Professor J. F. THORPE, responding, thanked Lord Chelmsford on behalf of the Society for the way in which he had proposed the toast. The Fellows knew Lord Chelmsford as a great viceroy and a great statesman, but he was probably best known to them in his capacity as Chairman of the Miners' Welfare Committee, to which he had referred.

The Miners' Welfare Committee dealt not only with the improvement of the social conditions of the mine workers, but expended a large sum yearly on the prosecution of research into safety conditions in mines. He was therefore glad to see the Chairman of the Safety in Mines Research Board, Sir Edward Troup, here this evening.

During recent years the Society had altered its procedure at the anniversary dinner. Hitherto it had been the custom for the retiring President, although displaced at the meeting during the afternoon, to take the chair at the evening function. The custom had this advantage—that it enabled the outgoing President to give an account of the changes that had been effected during his term of office. Under the existing procedure it devolved upon the new President to do this, and he was glad to have the opportunity of assuring Fellows that all was well with the Society, and that he was sure that all Fellows would agree in expressing their gratitude and regard to his predecessor for the able manner in which he had carried out the duties of his office. Financially, the Society had just turned a difficult corner, but it seemed as if conditions were now stabilised. Nevertheless, it would still be necessary for his successor as Treasurer to keep a watchful eye on the expenditure. The aim and object of the Society should be to increase its capital reserve, because it was only in this way that the subscription could be reduced. It was probably impossible to accumulate sufficient funds to warrant a general reduction in the subscription, but it was quite possible to build up a reserve fund which would enable the Council to lower the subscriptions of the younger Fellows, say for the first five years of their membership.

A Society renewed its youth by the infusion of new blood, and they must see that everything was done to help the infusion of

that new blood, without which the Society must inevitably die of old age.

Sir William Pope, in proposing the toast of "International Chemistry," said that they welcomed at their board many foreign friends. It was appropriate that the English Chemical Society was the first Society to drink the toast of "International Chemistry," because they were the oldest chemical society in the world, and during the last eighty-seven years they had seen grow up a large number of chemical societies all over the world; it was a privilege to invite their friends from the Continent to meet them at dinner.

They were honoured in having with them Professor Cohen, one of the greatest men in the chemical world, and one to whom they looked for many years to come to forward the interests of international chemistry, and to join the chemical societies of the world together in one great brotherhood for the development of chemical science. They had also with them distinguished gentlemen known to them by repute for many years, Professor Holmberg, from Stockholm, Professor Treadwell, from Switzerland, and Professor Wahl and Professor Komppa, from Helsingfors.

Professor Ernst Cohen in responding said :—

"Mr. President, Ladies, and Gentlemen, there exists a German adage: 'Steh' frisch auf, Tu's Maul auf, Hör' bald auf'; that is, in plain English, 'Rise briskly, open your mouth, be brief.' I generally follow this most practical advice but am sorry to say it will be impossible to do so to-night. I am invited, as you see on the menu, to respond to the toast of International Chemistry, on behalf of the Union Internationale and also the Nederlandsche Chemische Vereeniging. So I am standing before you Janus-faced. This implies that my toast cannot be as brief as it should be.

"Now there exists a very simple scheme for those who have to make a speech about old venerable Societies (as the Chemical Society is) when these are celebrating their anniversary. The man to whom we owe that scheme is Stephen Leacock. As you know, he is a Professor of Political Economy in MacGill University at Montreal, well known by his wit and his 'Discovery of England.' Leacock's model of such an anniversary speech would run as follows: 'Mr. Chairman, Ladies, and Gentlemen, If there is one thing I abominate more than another, it is turning out on a cold night like this to eat a huge dinner of twelve courses and know that I have to make a speech on top of it. Ladies and Gentlemen, I just feel stuffed. That is the plain truth of it. By the time we had finished that fish I could have gone home satisfied. Honestly I could. That's as much as I usually eat. And by the time I had finished the rest of the food I felt simply waterlogged, and so

I do still. More than that. The knowledge that I had to make a speech congratulating this Society of yours on its anniversary has haunted me all through the meal. I am not, in plain truth, the ready and brilliant speaker you take me for. That is a pure myth. If you could see the desperate home scene that goes on in my family when I am working up a speech, your mind would be at rest on that point. I'll go further, and be frank with you. How this Society has lived eighty-seven years I don't know. If all your dinners are like this, Heaven help you! I've only the vaguest idea of what this Society is, anyway, and what it does. I tried to get a Constitution this afternoon, but failed. . . .

"'It will be thirteen years before, please Heaven, you will celebrate the hundredth anniversary of this Society. I hope—I earnestly hope—that I shall be safely under the ground.'

"Now if you turn all this into the negative, it is exactly what I wanted to say. Not only on behalf of the International Union of Pure and Applied Chemistry, but also of my countrymen who deeply regret to be prevented from accepting your kind invitation to this dinner.

"It is long ago since Shakespeare put the question, 'What's in a name?' My reply is: There may be lots in a name! Look at the name of the International Union of Pure and Applied Chemistry I.U.P.A.C.—In this name you find condensed all the good wishes—and these are many—we bring to-night to the Chemical Society on behalf of the International Union:—

"I. means *Increase* of members and strength, in *Importance* and *Influence*.

"U. means *Unanimity*, wanted for the achievement of great deeds.

"P. not only means that we wish you in the future as good *Presidents* as the retiring one, but also that we hope that the Society will *Participate* more than ever in the work of the International Union.

"A. means the *Activity* of this Society and its *Achievements* in Chemistry, known all over the world, but equally its *Anniversary* we are celebrating to-day.

"C. means that we wish you *Concord: Concordia* res parvae crescunt! But C. also means the *Collaboration* with the Ladies in *Conventions*, such as we are enjoying at this very moment.

"I request my fellow-foreign guests to drink to the health and future of the Chemical Society."

Professor Dr. Bror A. L. Holmberg said:—

"Mr. President, Ladies and Gentlemen, on behalf of the Kemist-samfundet, Stockholm, I beg first to take the opportunity of

assuring the Chemical Society of our deepest gratitude for the invitation to this dinner and for the kindly way in which I have been treated here. As President of our Swedish Society I was very delighted to have this opportunity of coming here and thus of becoming acquainted with some of those distinguished chemists of whom I had read and heard so much. Then although it is true that chemistry is international, I nevertheless think that each country possesses some special characteristics, and though there is quantitatively a great difference between English and Swedish chemistry, it is easy to find many resemblances. I suppose this may be ascribed to that independent manner of thinking which the English as well as the Swedish people have in common, and which, especially here in England, has given, and is giving, birth to so many revolutionary and epoch-making theories and discoveries. I could say much more to you this evening, but considering the short time at my disposal I will limit myself to declaring my fullest agreement with the sentiments so ably expressed by Professor Cohen and on behalf of Swedish chemistry beg you to drink with me to the prosperity of British chemistry."

Prof. W. D. TREADWELL said that he had the great privilege and honour to convey to the Chemical Society heartiest greetings from the Société Suisse de Chimie.

He congratulated Prof. Cohen on his successful work as President of the International Union of Pure and Applied Chemistry and mentioned that the leading men in chemistry of his country were convinced that a continuous contact between the national chemical organisations would prove more and more to be a necessity. He expressed the hope that the International Union, which had for its object the internationalisation of chemistry in all its aspects, would continue to carry out its important and necessary work.

He recommended the exchange of talented students as a most important means for cultivating international relations, emphasising how important it was for young men to become acquainted with the chemistry of foreign countries, and mentioning that a knowledge of languages was a great help in this connection. Concluding, he expressed the hope that chemistry would prove one of the means towards the successful cultivation of happy international relations.

Professor WAHL said how greatly the members of the Chemical Societies in Finland, and both Professor Komppa and himself, had appreciated the invitation to be present at the Anniversary Meeting and at the Dinner. He stated that his colleague, Professor Komppa, had asked him to speak for both Societies, and referred to the debt his countrymen owed to the work of British chemists. He directed particular attention to the very high level at which

experimental work had ever stood and still stands in England. An outstanding feature of British chemistry is its excellent organisation.

He stated that the Society which he represented, the "Finska Kemistsamfundet," had about 200 members, and the "Soumalaisten Kemistien Seura," which Professor Komppa represented, 100; that most of these were employed in the pulp and paper industries of the country, and that about 80 per cent. of the whole export trade of Finland consisted of pulp and paper products.

In conclusion, Professor Wahl expressed thanks on behalf of Professor Komppa and himself for the hearty welcome they had received.

Professor F. G. Donnan, submitting the toast of "The Guests," said that in addition to eminent foreign chemists from Finland, Holland, and Sweden, the Society had the pleasure of welcoming the Ministers for Switzerland and Finland. In the minds of most Englishmen, Switzerland was associated with Edelweiss, mountains, and winter sports, but he himself associated it with the beautiful cheeses which came from that country. Few Englishmen knew the lovely country of Finland, but he had once had the privilege of spending a holiday on an island in the Saima Sea, and could never forget the sunsets in that wonderful land of trees and lakes. Sir Frank Dicksee, no doubt, found himself, as an artist, amongst strange company, but he could assure him that chemists were not as bad as they were painted. He could assure Sir Frank that chemists were simply the honest brokers between the Almighty and His molecules. He would not say much about the atoms, since he, as a chemist, felt that the Devil had had something to do with the atom; or if it were not the Devil, then it was a syndicate of mathematical physicists, and that was pretty much the same thing. He hoped Sir Ernest Rutherford would forgive him for these apparently irreverent allusions.

They welcomed, last but not least, Sir Alfred Mond, whom they were glad to see safe home again from his adventures in the Near East. He understood, from references in the Press, that whilst all the fuss was going on, Sir Alfred was quietly growing bananas on his farm by the Sea of Galilee. He would have thought that oranges would do better, but no doubt it was a question of sulphate of ammonia.

Sir Alfred was a man of vision and imagination. The Universities were not able to produce chemists fast enough to satisfy his demands. At present there was a splendid breeze blowing through chemical industry, which was largely due to Sir Alfred Mond and his magnificent lieutenants, amongst whom he was specially glad to welcome

Lt.-Colonel Pollitt, the creator of Billingham. He would also like to refer to the extremely valuable work which Sir Alfred was doing in bringing about a closer and more intimate association between Labour and the Employer. The development of the chemical industry of Great Britain could be divided roughly into three periods. The first dated from about 1830, when the salt tax was removed, and was associated with the names of Muspratt, Allhusen, Gaskell, Deacon, Tennant and many others, who created the great heavy chemical industries of this country and ruined the amenities of Liverpool and the pleasant brooks of Lancashire. The second period dated from the eighteen-seventies, when Sir Alfred's very distinguished father, Dr. Ludwig Mond, created the great Solvay-Mond ammonia-soda works at Winnington in Cheshire. The third great period began with the magnificent developments at Billingham-on-Tees, where the firm of Brunner Mond and Company (and now Imperial Chemical Industries, Ltd.) had established the most marvellous and gigantic scientific industry that the British Empire had ever seen.

The Swiss Minister, in replying, said that it was always a source of satisfaction for anybody to have something in common with great men, even if such quality is of a negative nature. In this instance he could say, like Lord Chelmsford (if he was to take literally the words his Lordship had just used), that he knew nothing about chemistry. Nobody surely expected him to give a discourse on science in the presence of so many illustrious persons, for everybody knew that his activity lay in quite a different direction. The only contact he could possibly have with chemistry would be the occasional drafting of a diplomatic note or protest against the traffic of illicit drugs, or the use of poisonous gas in warfare.

In responding he would have to be content to express thanks on behalf of those whose chemical experience and observation were confined to the daily use of instruments originally the result of researches of great chemists; but as far as those guests were concerned, who were themselves pillars of art and science, he must leave it to such distinguished speakers as Sir Frank Dicksee and Sir Alfred Mond to take charge of them in a manner worthy of their merits.

Sir Frank Dicksee said that if he found himself in strange company, it was strange only in that it was seldom so pleasant. He had to reply not only for himself, but also for the ladies, and he somewhat regretted that one of the ladies present had not been invited to make one of the responses to the toast of the guests. Among other achievements he supposed that it was due to the

chemists that the silkworm had been outvied in its own product, and that an industry had been thus created which was more successful in this country than in any other. That industry might be the means of enabling them to pay their income tax; it might fill the empty ships to take this artificial silk to the distant parts of the world, and perhaps the shipping industry might revive as a consequence. So the fertile chemist had outdone the silkworm on its own ground, and had given employment to the people and wealth to the nation.

Sir Alfred Mond recalled that at the annual dinner in 1891 it was a matter of interest that a very distinguished statesman, who was also a considerable scientist, the late Marquis of Salisbury, made an interesting speech in which he suggested that there was no need for the world to go to Chili for its fertilisers, and that they could be got from the air. That prophecy had been fulfilled, and it was possible to obtain nitrogen from the air to-day. In the last few months he had been carrying out an investigation on the soil conditions in the Near East, and the need for nitrogen was apparent. The production of the world could be developed immensely by the co-operation of the chemist and the engineer, as had been combined so ably in this country in the works established at Billingham. Some of the problems that had haunted Malthus, the growth of the population and many of the speculations as to how the world was going to feed its people, would be temporarily solved by artificial chemical fertilisers. The future held no terror if they were able to produce cellulose, sugar, and other foods for themselves, and in another fifty years' time, and even sooner, synthetic food might be made, and with the action of soil nitration and soil bacteria it would be unnecessary to use the labours of the husbandman. He had seen these things on a small scale in the laboratory. He had seen synthetic vitamins, and soon it would be possible to synthesise all the food supplies we wanted, and we need be frightened no longer in war or peace that we would be starved out in isolation, but we would be able to support ourselves so long as we put up a few more factories. He was certain we could produce an infinite variety of flavours and more colours.

There were also a number of applications of the science of chemistry to the needs of the ladies. What would the colour of the lips of the female sex be to-day if it had not been for the perpetual thought of great scientists upon the consideration of what new shades of lip-stick they should have? There would not be any use for artificial silk if it could not be dyed. They had Mavis, a new shade, which would charm them in clothes that were coming to them in the near future. The monotonous colour of men's dress

would not keep going a single chemical factory. The ladies owed much to chemists, and chemists much more to them. If there were no women in the world, there would be no dye industry.

The chemical industry, through the Chemical Society, should be one of the civilising influences throughout the world.

Sir ERNEST RUTHERFORD, who spoke at the request of the President, said that in reading the history of chemistry he was impressed by the incredible industry of chemists throughout the ages, and one result of the enormous work of the chemists had been to produce the present civilisation. At the same time, he wondered whether the chemist would not have accomplished more if he had worked less and thought more. Chemists to-day were not trying sufficiently to understand the compounds they were making, and he thought that the chemists of the future would be superior to those of the past. He looked forward with the greatest hope that the slight line dividing physics and chemistry would disappear in the next decade and the two would become one great subject.

Ordinary Scientific Meeting, Thursday, March 29th, 1928, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Byron B. Goldsmith	May 16th, 1889.	Sept. 8th, 1927.
Mysore G. Srinivasa Rao	Feb. 17th, 1927.	Jan. 16th, 1928.

The PRESIDENT announced that:

1. The Council, at its meeting held that afternoon, had considered the advisability of altering the hour at which the Ordinary Scientific Meetings are held, and had decided that, as an experiment, the meetings arranged for May 3rd and 17th and June 7th and 21st, 1928, should be held at 5.30 p.m. instead of at 8 p.m.

2. The following Committees for 1928–1929 had been appointed by the Council:

Finance Committee: J. L. Baker, F. P. Dunn, C. A. Hill, G. T. Moody, J. C. Philip, R. H. Pickard, W. P. Wynne, and the Officers (Treasurer as Chairman), with the Assistant Secretary as Secretary.

House Committee: J. L. Baker, Sir Herbert Jackson, Sir William J. Pope, Sir Robert Robertson, Alexander Scott, J. M. Thomson, and the Officers, with the Assistant Secretary as Secretary.

Library Committee: T. A. Henry, J. R. Partington (Chairman),

Alexander Scott, N. V. Sidgwick, S. W. Smith, J. F. Spencer, and the Officers, together with representatives of contributing Societies, with the Librarian as Secretary.

Publication Committee: M. P. Applebey, H. Bassett, H. V. A. Briscoe, W. M. Cumming, H. W. Dudley, U. R. Evans, J. J. Fox, R. Whytlaw Gray, A. J. Greenaway, T. A. Henry, C. K. Ingold, J. Kenyon, H. King, G. T. Morgan, K. J. P. Orton, J. R. Partington, J. C. Philip, F. L. Pyman, E. K. Rideal, R. Robinson, N. V. Sidgwick (Chairman), J. L. Simonsen, S. Sugden, and the Officers, with the Editor as Secretary.

Research Fund Committee: A. J. Allmand, E. C. C. Baly, F. E. Francis, W. N. Haworth, C. K. Ingold, A. Lapworth, W. H. Mills, Sir Robert Robertson, N. V. Sidgwick, Sir James Walker, and the Officers, with the Assistant Secretary as Secretary.

3. Replicas of the Emil Fischer and the Carl Graebe Medals had been presented to the Society by Dr. Otto Rosenheim.

4. The following Address of Congratulation had been sealed and will be presented to the Sociedad Española de Fisica y Quimica on the occasion of the Silver Jubilee Celebrations of its foundation to be held in Madrid from April 9th to 15th, 1928. The Society will be represented at the functions by the President.

The Chemical Society
to the
Sociedad Española de Fisica y Quimica.

We, the President and Fellows of the Chemical Society, offer to you, the President and Members of the Sociedad Española de Fisica y Quimica, our sincere congratulations on the occasion of the Silver Jubilee of the foundation of your Society.

Twenty-five years have now elapsed since the first meeting of your Society was held, on the twenty-third day of March, 1903, under the Presidency of the distinguished Engineer, Don Jose Echegaray. During that period the published annals of the Sociedad Española de Fisica y Quimica have appeared year by year, and bear witness to the continuous development of scientific research in your country. Your land is the mother of the great Spanish family of nations, the leader and the *fons et origo* of that noble and dignified Spanish culture which is destined in the future, as in the past, to transmit to the nations of the world the great civilisation of Rome. With that ancient tradition you combine such an active and successful participation in the scientific research work of the modern world that with your resources an era of great happiness and prosperity lies before you—an era in which the

scientific work and influence of the Sociedad Española de Fisica y Quimica will be of the greatest importance. *Semper sit in flore!*

Signed on behalf of the Chemical Society,

L.S.

JOCELYN THORPE, *President.*
T. SLATER PRICE, *Treasurer.*
C. S. GIBSON, } *Secretaries.*
T. S. MOORE, }
F. G. DONNAN, *Foreign Secretary.*

Sealed in Council this Twenty-ninth day of March, One Thousand Nine Hundred and Twenty-eight.

The following were formally admitted Fellows of the Chemical Society: A. H. Dickins, T. Mitchell, W. E. Hugh, R. D. Satchell, R. Bowsher, and C. W. Holman.

Certificates were read for the first time in favour of:

Thomas Ballantyne Clerk, B.Sc., 111/112, Hatton Garden, E.C. 1.
Bertram Lionel Nicol, M.A., 40, Lawn Road, Exmouth.
John Poinier Rogers, 70, Warren Avenue, Nottingham.
Leonard Alfred Sayce, M.Sc., Ph.D., A.I.C., 5, Toward Terrace, Sunderland.

The following Certificate has been authorised by the Council for presentation to ballot under Bye-Law I (2) in favour of:

Peter Mar, M.A., M.Sc., 296, Ellen Street, Winnipeg, Canada.

The following papers were read:

"The chemistry of the three-carbon system. Part XVII. *α-cyclo*-Hexylideneacetone and -methylethyl ketone." By A. H. DICKINS, W. E. HUGH, and G. A. R. KON.

"The nitration of aromatic thiocyanates and selenocyanates." By F. CHALLENGER and A. T. PETERS.

"Effects induced by the phenyl group. Part I. The addition of polar reagents to styrene and the behaviour of the halogenated ethylbenzenes." By F. ASHWORTH and G. N. BURKHARDT.

"On selenium tetrafluoride." By E. B. R. PRIDEAUX and C. B. COX.

"The laws of aromatic substitution. Part VIII." By B. FLÜRSCHEIM and E. L. HOLMES.

ARRHENIUS MEMORIAL LECTURE.

The Arrhenius Memorial Lecture will be delivered by Sir James Walker, F.R.S., in the Theatre of the Royal Institution, Albemarle

Street, W. 1 (by the courtesy of the Managers), on Thursday, May 10th, 1928, at 5.30 p.m.

Admission will be by ticket only. Each Fellow of the Society is entitled to two tickets, application for which should be made as early as possible to the Assistant Secretary, Chemical Society, Burlington House, W. 1.

RESEARCH FUND COMMITTEE.

A meeting of the Research Fund Committee will be held in June next. Applications for Grants, to be made on forms which can be obtained from the Assistant Secretary, Chemical Society, Burlington House, W. 1, must be received on or before Friday, June 1st, 1928.

All persons who received grants in June, 1927, or in June of any previous year, whose accounts have not been declared closed by the Council, are reminded that reports must be returned by June 1st.

List of Papers, or Abstracts thereof, received between March 15th and March 29th, 1928. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"The action of phosphorus pentachloride on homophthalic acid." By W. Davies and H. G. Poole.

"Acid and salt effects in catalysed reactions. Part XIV. The influence of inert salts on the catalytic catenary for acetic acid–acetate mixtures." By H. M. Dawson and A. Key.

"The inhibition of esterification by pyridine." By K. C. Bailey.

"The interaction of benzoyl chloride and diazomethane together with a discussion of the reactions of the diazenes." By W. Bradley and R. Robinson.

"Mobile hydrogen tautomerism analogous to the Wagner–Meerwein re-arrangement. Part II. The tautomerism of 1-(5)-hydroxy-2 : 2 : 3 : 3-tetramethyl*cyclo*pentan-5-(1)-one and its derivatives." By C. W. Shoppee.

"The nature of the alternating effect in carbon chains. Part XXVI. The mechanism of aromatic side-chain substitution." By C. K. Ingold and E. Rothstein.

"The mechanism of the degradation of fatty acids by mould fungi. Part II." By P. D. Coppock, V. Subramaniam, and T. K. Walker.

"The complex salts of β-methyltrimethylenediamine with bivalent platinum." By F. G. MANN.

"Mobile anion tautomerism. Part II. A complementary study of the mechanism of anionotropic change with special reference to the fate of the mobile anion." By H. BURTON.

"The occurrence of titanium tetrachloride in commercial disilicon hexachloride." By F. S. KIPPING and R. A. THOMPSON.

"Organic derivatives of silicon. Part XXXVI. Highly complex condensation products of diphenyl- and di-*p*-tolyl-silicanediol. Fission of the Si–Ph link." By F. S. KIPPING and A. G. MURRAY.

"Organic derivatives of silicon. Part XXXVII. The production of tetrabenzylsilicane oxide and other products by the action of sodium on dibenzylsilicon dichloride." By A. R. STEELE and F. S. KIPPING.

"Experiments on the synthesis of anthocyanins. Part IV. The constitution of *o*-benzoylphloroglucinaldehyde." By A. ROBERTSON, R. ROBINSON, and A. M. STRUTHERS.

"Experiments on the synthesis of anthocyanins. Part V. A synthesis of 3-β-glucosidylpelargonidin chloride, which is believed to be identical with callistephin chloride." By A. ROBERTSON and R. ROBINSON.

"The phosphorescent flame of sulphur." By H. J. EMELÉUS.

"The catalytic oxidation of nitro- and halogeno-derivatives of toluene by means of air." By E. B. MAXTED and A. N. DUNSBY.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, MAY 3rd, 1928.

BANERJI, RAMESH CHANDRA, Sainyer Gate, Jhansi, U.P. (India). Indian. Teaching. M.Sc. (Chemistry, First division), University of Allahabad. I have been teaching in the Government Inter. College, Jhansi, since 1922, and have been carrying on research work on the action of sunlight on some chemical changes, have submitted papers in some meetings of the Indian Science Congress, and in the *Zeitschrift für anorganische und allgemeine Chemie* in Germany. (*Signed by*) N. R. Dhar, K. P. Chatterjee, N. G. Chatterji.

BARRATT, ALFRED ERNEST, White House, Hawthorn Drive, Evington, Leicester. British. Brewer. I am interested in general and applied chemistry and would like to have the advantage of having the Journal. (*Signed by*) Chas. Geo. Matthews, S. F. Burford, F. C. Bullock.

BASU, SUDHIR CHANDRA, 21, Cromwell Road, South Kensington, London, S.W. 7. Hindu (Indian). Student of City and Guilds Engineering College. M.Sc. (Tech.), Calcutta University (Applied Chemistry). Worked in the

analytical department of the University College of Science, University of Calcutta. (*Signed by*) E. H. Farmer, M. Qudrati-Khuda, R. F. Hunter.

BRYANS, FRANK, 14, Church St., Pendlebury, Manchester. English. Chemist. B.Sc. (Tech.), M.Sc. (Tech.), Manchester. British Dyestuffs Corporation, 1921–22. 2½ Years' research experience, College of Technology, Manchester. "Electrolytic Reduction of Vat Dyes," *Chemistry and Industry*, Aug. 10, 1927. Present position: Chemist, British Dyestuffs Corp., Ltd. (*Signed by*) J. Kenner, F. A. Mason, John K. Wood.

BUCKLAND, HENRY SCOTT, Jesus College, Cambridge. British. Student. Being desirous to avail myself of the advantages of Fellowship of the Chemical Society. (*Signed by*) W. J. Pope, F. Gowland Hopkins, W. H. Mills.

CLARKE, BERTRAND STOCKDALE, Abbéville, 62, Algers Road, Loughton, Essex. British. Chief Pharmacist, Royal London Ophthalmic Hospital Dispensary, City Road, E.C. 1. Member of the Pharmaceutical Society (obtained at 17, Bloomsbury Square, W.C. 1). Lecturer in Chemistry and Pharmacy to Medical School, Royal London Ophthalmic Hospital, City Road, E.C. 1. Paper in preparation to be given on April 11, 1928, to Student Associates of the Pharmaceutical Society (Sheffield Branch). (*Signed by*) Ernest T. Neathercoat, W. A. Berry, V. H. Legg.

FRASER, JULIAN PAUL, c/o The Burmah Oil Co., Ltd., Syriam, Burma. British Subject. Chemist, Research Dept., The Burmah Oil Co. Inventor of process for extraction of aromatics and unsaturateds from mineral oils (Eng. Pat. 273,351), adopted by the Burmah Oil Co. Inventor of process for manufacturing lithopone without use of $ZnSO_4$ (Indian Pat. 1919). Process being worked in India. (*Signed by*) D. H. Peacock, M. Maung, M. G. Thein Kin.

GLASSPOOL, FREDERICK FRANK, Victoria College, Bath, Somerset. English. Senior Science Master, Victoria College, Bath. B.Sc. (Lond.). Senior Science Master (Chemistry, Physics, Botany), Victoria College, Bath, since 1924. Student at University College, Southampton, of Chemistry for London University B.Sc. Degree. (*Signed by*) D. R. Boyd, D. V. N. Hardy, H. H. Hatt, A. E. Clarence Smith.

GRIFFITHS, JOHN GAIUS ASHWELL, Gable Beach, Coppice Avenue, Great Shelford, Cambridge. English. Research Student. B.A., Cambridge, June 1927. A.I.C., October 1927. Research Student at Cambridge University Physical Chemical Laboratory since July 1927. (*Signed by*) T. M. Lowry, Eric K. Rideal, R. G. W. Norrish.

IVINS, DONALD VERNON, No. 208 (A.C.) Squadron, Royal Air Force, Egypt. British. R.A.F. officer and pilot. Past full-time student of Industrial Chemistry. (*Signed by*) Harry W. Webb, Ernest A. Rudge, W. J. Jones.

KELLETT, ALICE COPFIELD, Briarfield, 103, Claremont Road, Pendleton, Manchester. English. Student of University of London, taking the course for the London Trades' Diploma. B.Sc. (Chemistry Honours), at Manchester University, June 1927. Training to become a Chemistry Mistress in a High School. (*Signed by*) Arthur Lapworth, R. Robinson, Frederick Challenger, Arnold T. Peters.

LIANG, CHUAN-LING, 17, West Compound, Tsing Hua University, Peking, China. Chinese. Teacher. B.A., University of Wisconsin (1917). M.Sc., University of Chicago (1918). Teacher of Inorganic Chem. in Peking Academy (1919–22). Lecturer of Inorganic Chem. in Tsing Hua University (1922–27). (*Signed by*) John K. Wood, Arthur M. Morley, Thomas Kennedy Walker.

LUCAS, CHARLES EDWARD LESLIE, 27, Park Hill, Ealing, W. 5. British. Chemist. Associate of the Institute of Chemistry. Analytical Chemist

and Assistant to Works Manager, John Bell, Hills, & Lucas, Ltd., Manufacturing Chemists and Druggists, from 1922 to present date. (*Signed by*) H. B. Baker, James C. Philip, J. Stuart Hills.

Moon, Spencer Claude Gascoine, "Medway," Amiens St., Gladesville, N.S.W., Australia. British Subject. Analytical Chemist. Studied chemistry for 3 years at Sydney Technical High School, passing Intermediate Exam. with "A's" in Chemistry and Physics. Five years pupil and later Assistant Analyst in laboratory of W. M. Hamlet, Sydney (late Government Analyst for 32 years, formerly a Fellow of Chemical Society). (*Signed by*) W. M. Doherty, C. E. Fawsitt, Thomas Iredale, Francis Lions.

Moore, Edward William James, 307, Blackburn Road, Haslingden, Rossendale, Lancashire. English. Science Master. B.Sc., London. Hons. in Chemistry, 1910. A.I.C., 1918. Science Master, Haslingden Secondary School. (*Signed by*) E. C. C. Baly, T. P. Hilditch, C. Edward Sage.

Mullin, Charles Earl, Clemson College, Box 157, Clemson College P.O., South Carolina, U.S.A. American. Professor of Textile Chemistry and Dyeing. M.Sc. (Natl.). Fellow Amer. Inst. of Chem. Fellow Textile Inst. (England). "Acetate Silk and its Dyes" (book, 1927); on staff of "Chemical Abstracts" about 8 years; Yearbook Amer. Pharmaceutical Assn., 1924, see p. 1; many papers upon "Wool" and related subjects since 1925 in *American Dyestuff Reporter*; see index of "Chemical Abstracts" for references to numerous papers in the literature since about 1924. Book on "Constitution of Wool" now in preparation. (*Signed by*) Albert Parsons Sachs, Austin M. Patterson, James Kendall.

Owen, Glyn, Dalton Hall, Victoria Park, Manchester. British. University Assistant Lecturer. B.Sc., 1st Class Hons. Chem. (Wales). M.Sc. (Wales). Late Fellow of the University of Wales. J.C.S., 1923, **123**, 3392; 1924, **125**, 766 (joint publication with Prof. K. J. P. Orton, F.R.S.); 1926, **126**, 606 (joint publication with Prof. T. M. Lowry, F.R.S.). (*Signed by*) Kennedy Orton, H. B. Watson, F. G. Soper.

Patton, George Wilson, 36, Arlington Street, Anlaby Road, Hull. British. Works Chemist. B.Sc., Leeds. Four years chemistry student at Leeds University. Now Chemical Assistant with Appleby Iron Co., Ltd., Scunthorpe, Lincs. Wish to join Society because of the privileges and value of the literature. (*Signed by*) Frederick William Richardson, Adolph Jaffé, H. M. Dawson, M. S. Burr.

Phillips, Ralph Oliver, 1A, North Gate, Regent's Park, London, N.W. 8 (business address, Forestal Central Laboratories, Harpenden, Herts.). American. Chief Chemist, Forestal Land, Timber, & Railways Co., Ltd. B.Sc., M.Sc., Tufts College, Massachusetts, U.S.A. Instructor, Analytical Chemistry, Tufts College, 1915–16; Chemist, Pittsburgh Plate Glass Co., Boston; Chemist, Picatinny Arsenal, N.J.; Chief Inspector smokeless powder and high explosives plant, Picatinny Arsenal, N.J.; Instructor in charge U.S. Army School for Inspectors of Powder and Explosives; Assistant Inspector of Powder and Explosives, U.S. Navy; Chemist and Development Engineer, The Barrett Co., New York; Chief Chemist, The Tannin Corporation, New York; Technical Consultant, The Forestal Land, Timber, & Railways Co., Ltd., London and Buenos Aires, The Natal Tanning Extract Co., Natal, S. Africa. Have written several articles which have appeared in *Journal of the American Leather Chemists' Association*, *Journal of Chemical and Metallurgical Engineering*, etc. (*Signed by*) Andrew Turnbull, M. C. Lamb, F. M. Rowe.

Rae, Alec, The Trees, Thingwall Road, Wavertree, Liverpool. British.

Pharmacist. Pharmaceutical Society's Qualifying Examination, London, 1925. Pharmacist to the Liverpool Hospital for Consumption. I wish to receive the Chemical Society's Journals and have the use of the Library. (*Signed by*) Prosper H. Marsden, A. C. Abraham, H. Humphreys Jones.

RAMASWAMI, VAIDYANATHIER, 18, Luxemburg Gardens, Hammersmith, W. 6. British (Indian). Student. M.Sc. (Allahabad), 1st Class. Post-graduate research student at the Imperial College of Science, South Kensington. (*Signed by*) James C. Philip, H. J. T. Ellingham, M. K. Maitra, Jacob D. Cohen.

RAO, DEVANAHALLI KRISHNA, c/o The Commonwealth Trust, Ltd. (Late Basel Mission Industrials), Calicut, P.O., Malabar, S. India. Hindu. Chemist and Textile Colourist. B.Sc., Mysore University, Central College, Bangalore. Lecturer in Chemistry in the Government Collegiate High School, Bangalore (1921–22). Mysore Government Technical Scholar. Textile Colourist and Chemist to Messrs. The Commonwealth Trust, Ltd., Calicut, Malabar, South India, and in charge of their Dyeing and Bleaching and Soap Works and Laboratory since 1924. Senior member of the Society of Dyers and Colourists, London. (*Signed by*) V. G. Nair, A. Kesava Menon, V. M. Mascarenhas.

RICHARDSON, DONALD HENRY, 4, The Crossways, Onslow Village, Guildford. British. University Lecturer. Ph.D., M.Sc. (London). A.I.C. Senior Lecturer in Chemistry, Northern Polytechnic, London. Recognised teacher in the University of London. J.C.S., 1926, **129**, 522. (*Signed by*) H. J. S. King, T. J. Drakeley, G. J. Avey.

SESHADRI, TIRUVENKATA RAJENDRA, Chemical Department, University, Manchester. Indian. Research Student. M.A. (Chemistry) of the University of Madras, India. I have been engaged in chemical research for the past 5 years. Three of my papers have been published in the *Journal of the Indian Chemical Society* and one will soon appear in the *Journal of the Chemical Society*. A paper on "The Activity of the Double Bond in Coumarins and Related α-β-Unsaturated Carbonyl Compounds" will soon be published. (*Signed by*) John K. Wood, J. D. Fulton, W. Bradley, Z. Kitasato.

SPILLER, REGINALD HARVEY, Stonewall, Limpsfield, Surrey. British. Industrial Chemist (Imperial Chemical Industries, Ltd.). Associate Royal College of Science (A.R.C.S.). Associate Institute of Chemistry (A.I.C.). Diploma of Membership of the Imperial College (D.I.C.). Three years' research (1924–27) at the Royal College of Science, the results of which it is hoped will be published at once. (*Signed by*) H. B. Baker, Jocelyn Thorpe, James C. Philip, M. A. Whiteley.

TINGLE, ALFRED, Department of National Revenue, Ottawa, Canada. British. Chemist. B.Sc. (Aberdeen). B.Sc. (London). Ph.D. (Univ. of Pennsylvania). A variety of publications in *Journ. Soc. Chem. Ind.*, *Amer. Chem. Journ.*, *Journ. Amer. Chem. Soc.*, *Fuel. and Eng. Chem.*, *Science*, *Trans. Roy. Soc. Canada*, *Amer. Journ. Pharm.*, etc., from 1897 to date. *Trans.*, 1897, 1138–1148 (with F. R. Japp, F.R.S.). (*Signed by*) F. G. Wait, Alfred E. Macintyre, Frank T. Shutt.

WARREN, LEONARD ARTHUR, 16, Bourne Hill, Palmers' Green, London, N. 13. English. Research Student. B.Sc. (London) (not officially recognised till next year). I am engaged on my first year's research work (inorganic chemistry) at King's College, London, where I studied for the degree, and where I hold the position of Layton Research Student. (*Signed by*) Samuel Smiles, E. W. McClelland, W. B. Price.

WATERS, ROY BASIL, 124, Kingsland Road, Plaistow, E. 13. English.

Student. In order to keep abreast of contemporary work in pure chemistry. (*Signed by*) J. R. Partington, E. Roberts, E. E. Turner.

WEBB, WALTER WESTON, Fairmead Cottage, Spring Grove, Loughton, Essex. British born Subject. Chemist. Ph.D. (London). B.Sc. (London). A.I.C. Company Chemist, Cellactite Works, Ltd., Higham, Kent. Published work, in collaboration with Prof. A. J. Allmand, see "The Photolysis of Soda Hypochlorite Solutions," *Zeitsch. Phys. Chem.*, 131, 3/4, 189. (*Signed by*) A. J. Allmand, Samuel Smiles, E. W. McClelland, L. G. F. Dolley.

WHITELEY, WILLIAM LEONARD, 87, St. Mark's Road, Mitcham, Surrey. British. Schoolmaster. B.Sc. (London), 1st Class Hons. Chemistry. Teacher of Chemistry in Secondary Schools since 1915. (*Signed by*) P. C. Austin, R. T. Shepherd, Gerald Druce.

WILSON, RICHARD LLEWELYN, Gorphwysfa, Caersws, Montgomeryshire. British. Research Chemist. B.Sc. (Wales), Hons. in Chemistry, 1923. M.Sc. (Wales), 1925. Thesis on "The Vapour Pressures of Aqueous Solutions of Hydrofluoric Acid." Holding the position of Chief Research Chemist and Head of the Research Laboratory of The Phoenix Oil & Transport Co., Ltd., in Roumania since 1926. (*Signed by*) T. Campbell James, L. J. Hudleston, C. R. Bury, C. W. Davies.

WINTERTON, REGINALD JOSEPH, 30, Austin Street, King's Lynn, Norfolk. English. Student at East London College. In order to keep up with the latest work in chemistry. (*Signed by*) J. R. Partington, E. Roberts, E. E. Turner.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

CHI, YUOH FONG, Sterling Chemical Laboratory, Yale University, New Haven, Connecticut, U.S.A. Chinese. Graduate Student of the Department of Chemistry at Yale University. B.S. (Shanghai College, 1921). M.S. (University of Chicago, 1922). Prof. of Chemistry at National Wuchang University, Wuchang, China, in 1923–26. Lecture Assistant in the Department of Chemistry at University of Chicago in 1922–23. (*Signed by*) Richard H. F. Manske.

HARDY, FREDERICK, Windyridge, Curepe, Trinidad, B.W.I. English Professor of Chemistry and Soil Science. M.A. (Cambridge). Dip. Agric. Parts I and II (Cambridge). Soil papers in *J. Agric. Sci.*, XI, 1921, 1; XIII, 1923, 243, 340, 355; XV, 1925, 420, 434; XVI, 1926, 616. In *Soil Science*, XXIV, 1927, 71. In *J. Phys. Chem.*, XXX, 1926, 254. Chemical papers in *I.E.C.* XVII, 1925, 48, 1283. In *Bioch. J.*, XVIII, 1924, 283. In *J.S.C.I.*, XLIV, 1925, 305T. (*Signed by*) James P. Ogilvie.

HADDON, EDWARD CHARLES, Medical Research Laboratories, Entebbe, Uganda, Africa. English. Research Assistant. Matriculated, London 1920. Assistant and Student, Clinical Research Association, London 1908–15. Chemical Assistant, Military Service, R.A.M.C., France and Italy, 1915–18. Assistant, Clinical Research Assoc., 1919–20. Biochemical Research Assistant. Uganda Medical Service, 1920 to date. Two papers, "Apparatus for Continual Bacterial Growth" and "Observations on the Biochemistry of *B. abortus* and *melitensis*," *Roy. Soc. of Trop. Med. and Hyg.*, 1927. (*Signed by*) F. Mollwo Perkin, A. Prideaux Dawson.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Journal. Vol. I, etc. Melbourne 1927 +. (*Reference.*) From the Council.

DYSON, GEORGE MALCOLM. The chemistry of chemotherapy. London 1928. pp. 272. 32*s.* 6*d.* net. (*Recd.* 12/4/28.) From the Publishers: Messrs. Ernest Benn.

MATTHIS, ALFRED R. Insulating varnishes in electrotechnics. Translated by ADA RUSSELL. Manchester [n.d.]. pp. 283. ill. (*Recd.* 23/3/28.) From Messrs. Attwater & Sons.

NATIONAL BENZOLE ASSOCIATION and UNIVERSITY OF LEEDS. *Joint Benzole Research Committee.* Fifth report. London 1928. pp. iv + 238. ill. (*Reference.*) From the National Benzole Association.

SEXAGINT, The. Being a collection of papers dedicated to Professor YUKICHI OSAKA by his pupils in celebration of his sixtieth birthday. Kyoto 1927. pp. iv + 300. ill. (*Reference.*) From Kyoto Kagaku Gakushi-Kwai.

SUOMALAISEN TIEDEAKATEMIAN TOIMITUKSIA. Annales Academiæ Scientiarum Fennicæ. Series A. Vol. XXIX. [GUSTAF KOMPPA. Juhlajulkaisu 60-Vuotispäivăksi.] Helsinka 1927. (*Reference.*) From Professor Komppa.

UNITED STATES. *Department of Commerce.* Bureau of Standards. Circular No. 346. [Supersedes Circular No. 76.] Light metals and alloys—aluminium, magnesium. Washington 1927. pp. iv + 404. ill. (*Reference.*) $1.10. From the Director.

II. *By Purchase.*

AVICENNA. De Congelatione et Conglutinatione Lapidum. Being sections of the Kitâb-al-Shifâ'. The Latin and Arabic texts edited with an English translation of the latter and with critical notes by ERIC JOHN HOLMYARD and D. C. MANDEVILLE. Paris 1927. pp. x + 86. (*Recd.* 23/3/28.)

BAUEN UND WIRTSCHAFT. Beilage der Tonindustrie Zeitung. Vol. I, etc. Berlin 1928 +. (*Reference.*)

BRUNSWIG, H. *See* ESCALES, RICHARD.

COLLOID SYMPOSIUM MONOGRAPH. Papers presented at the fifth National Symposium on Colloid Chemistry. New York 1928. pp. 394. ill. 27*s.* net. (*Recd.* 29/3/28.)

COURTOT, CHARLES. Le magnésium en chimie organique. Nancy 1926. pp. vi + 352. 40 *fr.* (*Recd.* 2/4/28.)

ESCALES, RICHARD. Die Explosivstoffe. Heft VIII. Das rauchlose Pulver. By H. BRUNSWIG. Berlin 1926. pp. xii + 499. ill. *M.* 24. (*Recd.* 21/3/28.)

FOSSE, RICHARD. L'urée. (Recherches de chimie analytique, biologique et agricole). Les fonctions dinaphtopyranol, xanthydrol et sel de pyryle. Paris 1928. pp. xii + 304. 50 *fr.* (*Recd.* 28/3/28.)

FRIEND, JOHN NEWTON. [*Editor.*] A text-book of inorganic chemistry. Vol. X. The metal-ammines. By MARGARET MILLEN JEFFS SUTHERLAND. London 1928. pp xxviii + 260. 18*s.* net. (Two copies.)

LASSIEUR, ARNOLD. Électroanalyse rapide. Paris 1927. pp. viii + 206. ill. 20 *fr.* (*Recd.* 28/3/28.)

MÜLLER, ROBERT. Der Aufbau der chemischen Verbindungen (Molekülbau). (Sammlung, Vol. XXX.) Stuttgart 1928.

RAWDON, HENRY S. Protective metallic coatings. New York 1928. pp. 278. ill. 23*s.* net. (*Recd.* 17/3/28.)

UNNA, P. G. Histochemie der Haut. Leipzig 1928. pp. vi + 163. ill. *M.* 20. (*Recd.* 20/3/28.)

WECKE, FRIEDRICH. Handbuch der Zementliteratur. Charlottenburg 1927. pp. xxiv + 1447. (*Reference.*) *M.* 44.

WEIGEL, WILLIAM MELVIN. Technology and uses of silica and sand. (U.S. Bureau of Mines. Bulletin 266.) Washington 1927. pp. vi + 204. ill. 2*s.* 6*d.* net. (*Recd.* 11/4/28.)

III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Pamphlet No. 6. Standard methods of drying sultana grapes in Australia. By A. V. LYON. Melbourne 1928. pp. 16.

CLARKE, FRANK WIGGLESWORTH. Biographical memoir of William Francis Hillebrand 1853—1925. (From the *Biographical Mem. Nat. Acad. Sci.*, 1928, **12**.)

FLIGHT, W. S. Phenol-formaldehyde products in the electrical industry. Preston [n.d.]. pp. 17.

—— The effect of heat on the electric strength of some com-

mercial insulating materials. (From the *J. Inst. Electrical Eng.*, 1922, **60**.)

HILLEBRAND, WILLIAM FRANCIS. *See* CLARKE, FRANK WIGGLESWORTH.

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 41. Wire ropes for mines: some notes regarding their manufacture and use. London 1928. pp. 76. ill.

PICTET, AMÉ. Jubilé. Aula de l'Université, 26 Novembre 1927. Genève 1927. pp. 76. ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Forest Products Research.* Special Report No. 2. The principles of kiln-seasoning of timber. Part I. Types of commercial kilns in use. By S. T. C. STILLWELL. London 1928. pp. iv + 11. ill.

—— *Fuel Research.* Technical Paper No. 18. The reactivity of coke. I.—Standardised method for the determination of comparative values. By JOHN HENRY JONES, JAMES GRIEVE KING, and FRANK STURDY SINNATT. London 1927. pp. vi + 32. ill.

—— —— Technical Paper No. 19. The "unsaturated hydrocarbons" in the gases from the carbonisation of coal. By ALEXANDER BERNARD MANNING, JAMES GRIEVE KING, and FRANK STURDY SINNATT. London 1928. pp. iv + 19. ill.

—— —— Physical and chemical survey of the national coal resources, No. 10. The Lancashire coalfield: the Wigan four-feet seam. London 1927. pp. viii + 60. ill.

SHEPHERD, E. S., and MERWIN, HERBERT EUGENE. Gases of the Mt. Pelée lavas of 1902. (From the *J. Geology*, 1927, **35**.)

SIMONSEN, JOHN LIONEL. Presidential address. (From the *Proc. 15th Indian Science Congress*, 1928.) pp. 19.

TANAKA, YOSHIO, and KUWATA, TSUTOMU. On preparation of lead tetraethyl. (From the *Rep. Aeronautical Research Inst., Tokyo Imp. Univ.*, 1927, **2**.)

TATTERSFIELD, FREDERICK, and GIMINGHAM, CONRAD THEODORE. Studies on contact insecticides. Parts V and VI. (From the *Ann. Applied Biol.*, 1927, **14**.)

UNITED STATES. *Department of Agriculture.* Department Circular 423. The use of the electrolytic bridge for determining soluble salts. By R. O. E. DAVIS. Washington 1927. pp. 13. ill.

—— *Department of Commerce.* Bureau of Standards. Circular No. 337. Manufacture of lime. Washington 1927. pp. 104. ill.

—— —— —— Scientific Paper No. 558. An analysis of the arc and spark spectra of scandium (ScI and ScII). By HENRY NORRIS RUSSELL and WILLIAM F. MEGGERS. Washington 1927. ill.

—— —— —— Scientific Paper No. 559. A burette for the accurate measurement of gas volumes without gas connection to

a compensator. By E. R. Weaver and Martin Shepherd. Washington 1927. ill.

United States. *Department of Commerce.* Bureau of Standards. Scientific Paper No. 560. Density and electrical properties of the system, rubber–sulphur. By A. T. McPherson [and others]. Washington 1927. ill.

—— —— —— Scientific Paper No. 563. Gases in metals. III. The determination of nitrogen in metals by fusion in vacuum. By Louis Jordan and James R. Eckman. Washington 1927.

—— —— —— Scientific Paper No. 565. Thermal expansion of beryllium and aluminium–beryllium alloys. By Peter Hidnert and W. T. Sweeney. Washington 1927.

—— —— —— Technologic Paper No. 338. Color in the sugar industry. By H. H. Peters and Francis P. Phelps. Washington 1927. ill.

—— —— —— Technologic Paper No. 342. Ageing of soft rubber goods. By R. F. Tener, W. H. Smith, and W. L. Holt. Washington 1927. ill.

—— —— —— Technologic Paper No. 354. A modified method for determination of the copper number of paper. By B. W. Scribner and W. R. Brode. Washington 1927.

University of Illinois. *Department of Chemistry.* History of the decade, 1916–1927, publications of the Department [etc.]. (From the *Univ. Illinois Bulletin*, 1927, **24**.) ill.

Wahl, Walter. Über die Konstitution der Silikate. Parts I—III. (From the *Z. Kristallographie*, 1927, **66**.)

—— Über optisch–aktive Kupferverbindungen. (*Soc. Sci. Fenn., Comm. Phys.-Math.* 1927, **4**, 14.)

Wyckoff, Ralph W. G. Crystal structure in its relation to chemical problems. New York 1927. pp. 20.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, May 3rd, 1928, at 5.30 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, on April 2nd, 1928, of Professor Theodore William Richards, who was elected an Honorary Fellow on February 6th, 1908.

The following were formally admitted Fellows of the Chemical Society: P. D. Coppock, J. D. Cohen, J. Lewkowitsch, A. G. White, and F. L. Gilbert.

Certificates were read for the first time in favour of:

Leslie Charles Baker, M.Sc., 14, Solna Road, Winchmore Hill, N. 21.
Charles Edwin Burnett, 51, Grasmere Crescent, Monton, Eccles.
Kanai Lal Dey, M.Sc.Tech., 21, Cromwell Road, S. Kensington, S.W. 7.
John Gordon Green, Downlands, Hove Park Road, Hove.
Ram Jiban Ghose, B.Sc., 42, Chaulpatty Road, Bhowanipore, Calcutta.
Edgar Henley Hecker, B.Sc., Oficinas, North Lagunas, Iquique, Chile.
William Deacon Jarvis, 6, Belle Vue Street, Healey, Batley.
Robert Haynes Jeffers, 87, Kyrle Road, Clapham Common, S.W. 11.
Albert William Kent, B.Sc., 104, Langdale Road, Thornton Heath.
Frederic Barry Kipping, B.A., Ph.D., 45, Fulbrooke Road, Cambridge.
Charles Bernard Maddocks, A.I.C., 102, Moor Street, Burton-on-Trent.
Spencer Mort, M.D., Ch.B., M.S., F.R.C.S., North Middlesex Hospital, Edmonton, N. 18.
Victor Harold Perkoff, c/o Curaçao Trading Co., Curaçao, Dutch West Indies.
Edwin Arnold Piper, 428, Aigburth Road, Aigburth, Liverpool.
Robert Anthony Robinson, M.Sc., c/o The Commonwealth Fund, 1 East 57th Street, New York.
Gerald Rex Shutt, M.A., 57, Westwood Avenue, Blackpool.
Laurence James Summerbell, B.Sc., 192, Holland Road, W. Kensington, W. 14.
Vernon Thorpe Tadman, A.I.C., Wissington Sugar Factory, Nr. Stoke Ferry, Norfolk.

Miss M. Carlton and Dr. J. N. Sugden were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows:

Ramesh Chandra Banerji, M.Sc.
Alfred Ernest Barratt.
Sudhir Chandra Basu, M.Sc.
Frank Bryans, M.Sc.
Henry Scott Buckland.
Yuoh Fong Chi, M.S.
Bertrand Stockdale Clarke.
Julian Paul Fraser.
Frederick Frank Glasspool, B.Sc.
John Gaius Ashwell Griffiths, B.A., A.I.C.
Edward Charles Haddon.
Frederick Hardy, M.A.
Donald Vernon Ivins.
Alice Corfield Kellett, B.Sc.
Chuan-Ling Liang, B.A., M.Sc.
Charles Edward Leslie Lucas, A.I.C.
Spencer Claude Gascoine Moon.
Edward William James Moore, B.Sc., A.I.C.
Charles Earl Mullin, M.Sc.
Glyn Owen, M.Sc.
George Wilson Patton, B.Sc.
Ralph Oliver Phillips, M.Sc.
Alec Rae.
Vaidyanathier Ramaswami, M.Sc.
Devanahalli Krishna Rao, B.Sc.
Donald Henry Richardson, Ph.D., M.Sc., A.I.C.
Tiruvenkata Rajendra Seshadri, M.A.
Reginald Harvey Spiller, A.R.C.S., A.I.C., D.I.C.
Alfred Tingle, B.Sc., Ph.D.
Leonard Arthur Warren, B.Sc.
Roy Basil Waters.
Walter Weston Webb, Ph.D., B.Sc., A.I.C.
William Leonard Whiteley, B.Sc.
Richard Llewelyn Wilson, M.Sc.
Reginald Joseph Winterton.

The following papers were read :

"The mechanism of the degradation of fatty acids by mould fungi. Part II." By P. D. Coppock, V. Subramaniam, and T. K. Walker.

"Experiments on the synthesis of anthocyanins. Part V. A synthesis of 3-β-glucosidylpelargonidin chloride, which is believed to be identical with callistephin chloride." By A. Robertson and R. Robinson.

"The phosphorescent flame of sulphur." By H. J. Emeléus.

"Studies of valency. Part IX. Molecular structure of thallium salts. (*a*) Thallium tri-iodide [with Mrs. R. R. Goldstein], (*b*) Alkyl derivatives [with F. L. Gilbert]." By A. J. Berry and T. M. Lowry.

Extra meeting held on Thursday, May 10th, 1928, at 5.30 p.m., in the theatre of the Royal Institution, Professor J. F. Thorpe, C.B.E., D.Sc., F.R.S., President, in the Chair.

Sir James Walker, LL.D., F.R.S., delivered the Arrhenius Memorial Lecture. A vote of thanks to the Lecturer, proposed by Professor F. G. Donnan, C.B.E., F.R.S., and seconded by Professor H. Brereton Baker, C.B.E., F.R.S., was carried with acclamation.

Ordinary Scientific Meeting, Thursday, May 17th, 1928, at 5.30 p.m., the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

Reference was made to the loss sustained by the Society, through death on May 7th, 1928, of Walter Bezant Lowe, who was elected a Fellow on the 21st February, 1878.

The PRESIDENT announced:

1. That the following Address of Congratulation had been sealed and sent to the President and Members of the Mendeléeff Committee on the occasion of the Fifth Mendeléeff Congress at Kazan, June 15th to 21st, in honour of the centenary of Butleroff:

The Chemical Society
to the
President and Members of the
Mendeléeff Committee.

We, the President, Council, and Fellows of the Chemical Society, send to the President and Members of the Mendeléeff Committee our cordial greetings on the occasion of the Fifth Mendeléeff Congress at Kazan in honour of the memory of Professor A. M. Butleroff.

We recall the outstanding and fundamental investigations in the field of Organic Chemistry carried out by Butleroff, amongst which we would mention his important work on the tertiary alcohols, pinacoline, trimethylacetic acid, and more particularly on the unsaturated hydrocarbons.

We desire to associate ourselves with our Russian scientific colleagues and with chemists throughout the world in paying homage to the memory of Butleroff on the occasion of the Centenary of his birth, and we send cordial greetings, and best wishes for a most successful meeting at Kazan.

Signed on behalf of the Chemical Society,

(LS)

JOCELYN THORPE, *President.*
T. SLATER PRICE, *Treasurer.*
C. S. GIBSON, } *Secretaries.*
T. S. MOORE, }
F. G. DONNAN, *Foreign Secretary.*

Sealed in Council this Seventeenth Day of May, One Thousand Nine Hundred and Twenty-eight.

2. That a meeting of the Faraday Society would be held in the laboratory of Physical Chemistry, University of Cambridge, on

September 28th and 29th, 1928, when a general discussion would take place on the catalysis of homogeneous reactions, such as isomeric change, hydrolysis and esterification, association and dissociation, thermal decomposition, slow oxidation, etc. under the following headings :

1. Uncatalysed homogeneous reactions and negative catalysis.
2. Intermediate addition-compounds in homogeneous catalysis.
3. Neutral salt and activity effects in homogeneous catalysis.
4. Ionisation as factor in homogeneous catalysis.

Members and guests will be accommodated by the courtesy of the college authorities at Pembroke College during the two days of the meeting, and the attendance of Fellows of the Chemical Society will be heartily welcomed by the Council of the Faraday Society.

Miss A. C. Kellett was formally admitted a Fellow of the Chemical Society.

Certificates were read for the first time in favour of :

Margaret Ethel Birt, B.Sc., 20, Longton Avenue, Sydenham, S.E. 26.
Julian K. Dale, M.A., Ph.D., 2000 16th Street, N.W., Washington.
John Chaldecott Everett, Emmanuel College, Cambridge.
Percy James Fay, M.A., 8, Wilberforce Road, N. 4.
John Arthur Greene, 34, Dorset Square, N.W. 1.
Hedley Harrison, 4, Dorset Gardens, Hull.
Geoffrey Starkey Ward, 16, Haslemere Avenue, Bridlington.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) in favour of :

Heinrich Hubert Maria Josef Houben, Dr.Phil., Hauptstrasse 29, Berlin.
Pokiarath K. Kurup, B.A., Calicut Soaps & Candles Co., Ltd., P.O. Box 52, Calicut.
Nicholas Francis Lovasz, 42, Engelwold Drive, Saxonwold, Johannesburg.

The following papers were read :

"The action of fluorine upon aqueous solutions of chromium and manganese salts." By F. FICHTER and E. BRUNNER.

"Neocyanine." By F. M. HAMER.

"Syntheses of cyclic compounds. Part III. The reduction of some unsaturated cyano-esters with moist aluminium amalgam. A new synthesis of mono-substituted malonic acids and of ββ$\beta'\beta'$-tetramethyladipic acid. Further evidence for the multiplanar configuration of the *cyclo*heptane ring." By I. VOGEL.

List of Papers, or abstracts thereof, received between March 29th and May 17th, 1928. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"The heat of crystallisation of the normal long-chain hydrocarbons." By K. VAN BIBBER.

"Conditions of formation of rings attached to the *o*-, *m*-, and *p*-positions of the benzene nucleus. Part III." By A. F. TITLEY.

"A phase-rule investigation of cupric bromide in aqueous and hydrobromic acid solutions." By S. R. CARTER and N. J. L. MEGSON.

"Striated photographic records of explosion waves. Part II. An explanation of the striae." By C. CAMPBELL and A. C. FINCH.

"Electrometric titration curves of dibasic acids. Part I. Normal acids." By R. GANE and C. K. INGOLD.

"The lupin alkaloids. Part I." By G. R. CLEMO and G. C. LEITCH.

"The dilution and neutral salt errors of buffer mixtures." By C. MORTON.

"Dichloro-*o*-xylenes." By L. E. HINKEL, E. E. AYLING, and L. C. BEVAN.

"The isomeric α-aryl-2-aminocinnamic acids." By J. M. GULLAND and C. J. VIRDEN.

"The alkaline hydrolysis of esters in aqueous alcoholic solution. Part II. The interaction of phenoxides and aliphatic esters." By E. S. GYNGELL.

"The complete optical resolution of chloroiodomethanesulphonic acid." By J. READ and A. M. MCMATH.

"The action of bromine water on certain olefinic hydrocarbons and ethers." By J. READ and W. G. REID.

"The reaction between acetylene and sulphur at temperatures up to 650°." By J. B. PEEL and P. L. ROBINSON.

"The action of chlorine on jute fibre." By H. W. STRONG.

"Studies on the substituted quaternary azonium iodides. Part V. The molecular state of phenyldimethylazonium, phenylmethylethylazonium, phenyldiethylazonium, phenylmethylbenzylazonium, and phenylpropylbenzylazonium iodides in solution." By B. K. SINGH and M. R. SUD.

"The action of certain dibromotetracarboxylic esters on the sodium derivatives of ethyl malonate, ethyl ethanetetracarboxylate, and analogous substances." By J. J. LENNON and W. H. PERKIN.

"Experiments on the synthesis of brazilin and hæmatoxylin and their derivatives. Part III." By W. H. PERKIN, J. N. RÂY, and R. ROBINSON.

"Derivatives of 7 : 8 : 9 : 10-tetrahydro-αβ-naphthacarbazole and of 8 : 9 : 10 : 11-tetrahydro-α′β′-naphthacarbazole." By S. H. OAKESHOTT and S. G. P. PLANT.

"The influence of arsenic on the catalytic activity of platinum for the oxidation of sulphur dioxide." By E. B. MAXTED and A. N. DUNSBY.

"Optical activity and the polarity of substituent groups. Part IX. Menthyl esters of methoxynaphthoic and of diphenyl-2-carboxylic acids." By E. BRETSCHER, H. G. RULE, and J. SPENCE.

"An alternative formulation of the dilution law." By H. M. DAWSON.

"The nitration of *m*-fluorophenol." By H. H. HODGSON and J. NIXON.

"The condensation of hexahydrocarbazole and of tetrahydropentindole with *cyclo*pentanone cyanohydrin." By S. G. P. PLANT and D. M. L. RIPPON.

"2-Phenyl-1 : 3-diaminopropane and related compounds." By J. G. JACKSON and J. KENNER.

"The influence of constitution on the stability of racemates." By A. FINDLAY and A. N. CAMPBELL.

"Colloidal platinum. Part IV. The existence of hexahydroxyplatinic acid in colloidal platinum solutions." By S. W. PENNYCUICK.

"The influence of the intensity of illumination on the velocity of the photochemical union of bromine and hydrogen, and the determination of the mean life of a postulated catalyst." By F. BRIERS and D. L. CHAPMAN.

"A synthesis of pyrylium salts of anthocyanidin type. Part XV. The synthesis of cyanidin chloride by means of *o*-benzoylphloroglucinaldehyde." By A. ROBERTSON and R. ROBINSON.

"A synthesis of pyrylium salts of anthocyanidin type. Part XVI. The synthesis of pelargonidin chloride by means of *o*-benzoylphloroglucinaldehyde." By A. ROBERTSON, R. ROBINSON, and J. SUGIURA.

"A synthesis of pyrylium salts of anthocyanidin type. Part XVII. The synthesis of peonidin chloride by means of *o*-benzoylphloroglucinaldehyde." By S. MURAKAMI and R. ROBINSON.

"A synthesis of pyrylium salts of anthocyanidin type. Part XVIII. A synthesis of malvidin chloride." By W. BRADLEY and R. ROBINSON.

"Equilibrium in binary systems composed of cresols and amines." By N. A. PUSHIN and L. SLADOVITCH.

"The influence of intensive drying on the system nitrogen peroxide–nitric oxide–oxygen." By J. W. SMITH.

"The apparent hydration of ions. Part I. The densities and viscosities of saturated solutions of sodium and potassium chlorides in hydrochloric acid." By J. W. INGHAM.

"The synthesis of *meso*-alkyl and *meso*-aryl anthracene derivatives. Part IV." By E. DE B. BARNETT and J. L. WILTSHIRE.

"The electrokinetic potential between the solid and liquid states of a single substance." By F. FAIRBROTHER and F. WORMWELL.

"The interaction of cuprous chloride and the chromates of potassium in a solution of sodium chloride." By H. J. P. VENN and V. EDGE.

"Studies in colour and constitution. Part III. The influence of the methylthiol, methoxy-, and chlorine groups on the colours of the nitrobenzaldehydephenylhydrazones." By H. H. HODGSON and F. W. HANDLEY.

"Studies of valency. Part X. Electrometric titration of Vernon's α- and β-dimethyltelluronium bases." By F. L. GILBERT and T. M. LOWRY.

"Studies of valency. Part XI. Molecular conductivities and extinction-coefficients of derivatives of *cyclo*telluropentane." By F. L. GILBERT and T. M. LOWRY.

"The addition of halogens to unsaturated acids and esters. Part I. The addition of equimolecular mixtures of bromine and chlorine to cinnamic acid and its derivatives in non-hydroxylic solvents." By N. W. HANSON and T. C. JAMES.

"Cryoscopic irregularities with phenols." By G. M. RICHARDSON and P. W. ROBERTSON.

"The thermal decomposition of thiobenzanilide." By A. W. CHAPMAN.

"The action of substituted aromatic amines on camphoric anhydride-bromo- and iodo-camphoranilic acids and camphorobromo- and iodo-phenylimides." By M. SINGH, R. SINGH, and K. LAL.

"Steric hindrance in reactions of substituted quinoxalines." By G. M. BENNETT and G. H. WILLIS.

"*N* : *N'*-Diphenyl-*o*-phenylenediamine." By C. S. GIBSON and J. D. A. JOHNSON.

"Synthetical experiments on the aporphine alkaloids. Part III. A synthesis of corytuberine dimethyl ether." By J. M. GULLAND and R. D. HAWORTH.

"The relative reactivity of methylene groups in 1 : 3-diketones." By A. B. E. Lovett and E. Roberts.

"Syntheses of cyclic compounds. Part IV. The catalytic decomposition of suberic acid and the preparation of suberone directly from mixtures of suberic and azelaic acids." By I. Vogel.

"The adsorption of vapours on an amalgamated platinum surface." By J. W. Smith.

"Resolution of racemic chlorobromoacetic acid." By H. J. Backer and H. W. Mook.

"Pseudo-ternary systems containing sulphur. Part III. Sulphur–sulphur monochloride." By D. L. Hammick and M. Zvegintzov.

"The mechanism of tautomeric interchange and the effect of structure on mobility and equilibrium. Part III. The function of alkaline and acid catalysts in the mutarotation of some derivatives of tetramethyl glucose." By J. W. Baker.

"On the nature of the deposit formed during the electrolysis of neutral and alkaline solutions with an antimony cathode." By J. Grant.

"The molecular configurations of polynuclear aromatic compounds. Part VIII. 5 : 5-Dichlorodiphenyl-3 : 3′-dicarboxylic acid." By F. B. McAlister and J. Kenner.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, JUNE 21st, 1928.

Baker, Leslie Charles, 14, Solna Road, Winchmore Hill, N. 21. British. Assistant, Dept. of Biochemistry, University College, W.C. 1. B.Sc., M.Sc., London. Papers (with G. F. Marrian) *Biochem. J.*, 1927, **21**, 1005; (with G. F. Marrian, J. C. Drummond, and H. Woollard), *ibid.*, 1336; (with O. L. Brady, R. F. Goldstein, and S. Harris) *J.C.S.*, 1928, 529. (*Signed by*) J. C. Drummond, O. L. Brady, W. K. Slater.

Birt, Margaret Ethel, 20, Longton Avenue, Sydenham, S.E. 26. British. Schoolmistress. B.Sc. London. Bedford College, London. Head of the Chemical Department (for last seven years), St. Paul's Girls' School, Hammersmith, W. 6. Hon. Sec. Association of Women Science Teachers. (*Signed by*) James F. Spencer, Ernest S. Hedges, Robert N. Kerr.

Burnett, Charles Edwin, 51, Grasmere Crescent, Monton, Eccles, Lancs. British. Chemist. Assoc. Manchester College of Technology. Full Technological Certificate, City and Guilds of London Institute, Oils and Fats. Painters' Oils, Colours, and Varnishes (First Class). For the last twenty years have studied pure and applied chemistry at Tottenham Polytechnic, Borough Polytechnic, Regent Street Polytechnic, and Manchester College of Technology. (*Signed by*) E. L. Rhead, Geo. Johnson, Charles Hy. Martin.

Clerk, Thomas Ballantyne, 111/112, Hatton Garden, London, E.C. 1. British-born British subject. Chartered Patent Agent. B.Sc. of Glasgow

University. Studied pure and applied chemistry at Glasgow University and Royal Technical College, Glasgow. Chemistry and Metallurgy were taken as subjects in my B.Sc. examination. Have been a partner in the firm of Boult, Wade, & Tennant, Chartered Patent Agents, since March 1927, and have sole responsibility for my portion, largely chemical, of the firm's technical and legal business in connection with patent applications and patent litigation and advice to the firm's clients concerning their patents. (*Signed by*) Horatio Ballantyne, Robert Robertson, Dugald Clerk, J. N. Goldsmith, William H. Ballantyne.

DALE, JULIAN K., 2000, 16th Street, N.W., Washington D.C. U.S.A. American. Research Chemist. A.B., M.A., Ph.D., Princeton University. Member American Chemical Society. Publications in *J.A.C.S.* (*Signed by*) John Read, Geo. J. Robertson, J. Oldham.

DEY, KANAI LAL, 21, Cromwell Road, South Kensington, S.W. 7. Indian, Hindu. Student of City and Guilds Engineering College. M.Sc. (Tech.), Calcutta University (Applied Chemistry). Worked in the Analytical Department of the University College of Science. (*Signed by*) E. H. Farmer, M. Qudrati-Khuda, R. F. Hunter.

EVERETT, JOHN CHALDECOTT, The Brambles, Freshwater, Isle of Wight. English. Student. Honours Student in Chemistry (Cambridge). (*Signed by*) R. G. W. Norrish, F. G. Mann, R. E. D. Clark.

FAY, PERCY JAMES, 8, Wilberforce Road, London, N. 4. English. Research Chemist, Messrs. A. Sanderson & Sons, Ltd. M.A. (Cantab.), Int. B.Sc. (Lond.), late Exhibitioner of Christ's College, Cambridge. On leaving Cambridge, studied at Berlin University under Nernst (five semesters), and was afterwards an Assistant Chemist to Messrs. Mander Bros., Ltd., Wolverhampton. Have done a considerable amount of abstracting and reading through proof-sheets (paints and varnishes). Member Society of Chemical Industry and of Oil and Colour Chemists' Association. (*Signed by*) W. J. Pope, F. W. Dootson, A. J. Berry.

GHOSE, RAMJIBAN, 42, Chaulpatty Road, Bhowanipore, Calcutta, India. Indian, Hindu. Analytical and Technical Chemist. B.Sc., with "distinction" of the Calcutta University from the Presidency College, Calcutta. Eight years' experience as Analyst and Manufacturing Chemist in the Chemical Works of Messrs. Smith, Stanistreet & Co., Ltd., 18, Convent Road, Entally, Calcutta. (*Signed by*) H. Cooper, R. L. Datta, H. W. Thomas.

GREEN, JOHN GORDON, Downlands, Hove Park Road, Hove, Sussex. British. Analytical Chemist in Food Manufacturing. Five years' part-time student in Laboratory of Public Analyst and Manufacturing Chemist. Three years' practical experience in Food Manufacturer's Laboratory, and during greater part of this time have had full charge. (*Signed by*) William Jago, C. Edwd. Sage, F. W. F. Arnaud.

GREENE, JOHN ARTHUR, 34, Dorset Square, N.W. 1. British. Consultant Chemical Engineer to Bindphast Products, Ltd., Zambesin Mining Development Co., Ltd., late H.M. Petroleum Research Dept. (Admiralty). Editor, "Treatise on British Mineral Oils" (Griffin). Author, "Patent, Smokeless and Semi-Smokeless Fuels" (Pitman). (*Signed by*) Percy E. Spielmann, F. Mollwo Perkin, J. E. Hackford.

HARRISON, HEDLEY, 4, Dorset Gardens, Brunswick Avenue, Hull. British. Analyst for the past seven and a half years to Messrs. H. F. & Lee Smith, and also to the branches of Barkers & Lee Smith, Ltd., Hull. (*Signed by*) Geo. H. Appleyard, Harry Thompson, Thos. A. Nightscales.

HECKER, EDGAR HENLEY, Oficinas, North Lagunas, Iquique, Chile.

United States citizen. Chemist. B.Sc. (Lond.). (*Signed by*) F. G. Donnan, C. S. Gibson, Eric K. Rideal.

JARVIS, WILLIAM DEACON, 6, Belle Vue Street, Healey, Batley, Yorkshire. British. Power Station Chemist. Diploma Chemistry and Dyeing, Technical College, Bradford. (*Signed by*) F. W. Richardson, A. Jaffé, Leonard Seal.

JEFFERS, ROBERT HAYNES, 87, Kyrle Road, Clapham Common, London, S.W. 11. British. Botanist and Student of Chemistry. N.D. Hort., F.R.H.S. Diploma of the Wisley School of Horticulture, Student of Agricultural Chemistry at Wisley School of Horticulture, Edinburgh, and East of Scotland College of Agriculture, and Royal Botanic Garden, Edinburgh. Three months Organic Chemistry, Robert Gordon's Technical College, Aberdeen. (*Signed by*) Russell G. Thin, Francis V. Darbishire, H. J. Page.

KENT, ALBERT WILLIAM, 104, Langdale Road, Thornton Heath, Surrey. British. Schoolmaster. B.Sc. (2nd Hons. Chemistry), King's College, London. Hons. School Chemistry, King's College, London, 1922–24. Science Master, The Ingram School, Croydon, 1925–27, John Ruskin School, Croydon, 1927 to date. Paper on "Development of Theory of Chemical Effects of Electric Current," in preparation for M.Sc. (Hist. of Science). (*Signed by*) A. J. Allmand, Samuel Smiles, C. S. Salmon, L. T. M. Gray, H. W. Cremer.

KIPPING, FREDERIC BARRY, 45, Fulbrooke Rd., Cambridge. British. Demonstrator in Chemistry. B.A., Ph.D. (Cambridge). *J.C.S.*, 1924, **125**, 2396; 1926, 494, 1076; 1927, 528. (*Signed by*) W. J. Pope, H. McCombie, F. G. Mann.

MADDOCKS, CHARLES BERNARD, 102, Moor Street, Burton-on-Trent. British. Research Student. A.I.C. (*Signed by*) F. S. Kipping, E. B. R. Prideaux, B. D. Shaw.

MORT, SPENCER, Lt.-Colonel, North Middlesex Hospital, Edmonton, London, N. 18. British. Medical Superintendent and Surgical Director. M.B., Ch.B. (Hons.), M.D., M.S. (Glasgow), F.R.C.S., F.R.S. (Edin.). Trained Glasgow and West of Scotland Royal Tech. College, Glasgow (Student). Univ. Glasgow, Univ. Paris, Pasteur Institute, Paris (Research Fellow). Also Dresden and Institut du Radium, Univ. Paris (Research Fellow). (*Signed by*) A. M. Low, John Glaister, W. Lester, St. J. Alton.

NICOL, BERTRAM LIONEL, 40, Lawn Road, Exmouth, Devon. British. Schoolmaster. M.A. Cambridge. Senior Science Master, King's School, Rochester, since September 1924. (*Signed by*) W. G. Palmer, W. H. Mills, A. F. H. Ward, F. W. Dootson.

PERKOFF, VICTOR HAROLD, 37, Lea Bridge Rd., Clapton, E. 5 (present address, c/o Curaçao Trading Co., Curaçao, Dutch West Indies). British. Petroleum Chemist. Junior Chemist, W. J. Bush & Co., Hackney, E. 8, two years. Junior Works Chemist, English Oilfields, Ltd., Norfolk, two years. Chemist, J. E. Hackford, B.Sc., F.C.S., Research Laboratories, three years. Chemist, British Controlled Oilfields, Ltd., Curaçao, D.W.I. (*Signed by*) J. E. Hackford, Percy E. Spielmann, Otto L. Shaw.

PIPER, EDWIN ARNOLD, Moorland Villa, 428, Aigburth Road, Aigburth, Liverpool. British. Student of Analytical and Manufacturing Chemistry. Served as a Chemist in H.M. Forces throughout the entire period of War. Specially desire to receive the privileges accorded to Fellows of the Chemical Society. Specialising in Actinotherapy and Manufacturing Chemistry. (*Signed by*) Eric S. Brooks, Alex. W. McLaren, Francis Comer Savage.

ROBINSON, ROBERT ANTHONY, Rokeby, St. Bernards Road, Olton, Warwickshire (c/o The Commonwealth Fund, 1 East 57th Street, New York, U.S.A.). British. American Commonwealth Fellow. B.Sc. (Honours),

Birmingham, 1925. Qualified for M.Sc., Birmingham, 1926. Priestley Research Scholarship, Birmingham, 1925–26. D.S.I.R. Grant, 1925–27. American Commonwealth Fund Fellowship, 1927–29. *J.C.S.*, 1927, 267, 1906, 1912. (*Signed by*) W. N. Haworth, S. R. Carter, Wm. Wardlaw, E. Ashley Cooper.

ROGERS, JOHN POINIER, 70, Warren Avenue, Haydn Rd., Nottingham. British. Senior Assistant in Chemist and Pharmaceutical Laboratories. Senior Assistant for past eight years in laboratories of Messrs. Newball & Mason, Ltd., Manufacturing Chemists, Nottingham, and late student of the Nottingham University College. I desire to keep in touch with developments of Pure Chemistry and to use the publications in the Library for purposes of research. (*Signed by*) E. B. R. Prideaux, F. C. Laxton, F. Wilson Moulds.

SAYCE, LEONARD ALFRED, 5, Toward Terrace, Sunderland, Co. Durham. British. Lecturer in Chemistry, Armstrong College (University of Durham). M.Sc., Ph.D. (Dunelm). Associate of the Institute of Chemistry. Associate of the Institute of Physics. Formerly Chemist to Sunderland Gas Co.; Lecturer (part-time) in Chemistry, Physics, etc., at the Sunderland Technical College; Investigator under the Dept. of Scientific and Industrial Research. Publications: *Phil. Mag.*, 1925, **50**, 916; *J. Sci. Instr.*, 1925, **2**, 289; 1926, **3**, 20, 116; *J. Soc. Chem. Ind.*, 1921, **40**, R466; *Proc. Dur. Univ. Phil. Soc.*, 1924, **7**, 30; *Exptl. Wireless*, 1923, **1**, 70; 1924, **1**, 721; **2**, 9; 1926, **3**, 69, 144, 243, etc.; *J.C.S.*, 1925, **127**, 315; 1926, 957, 2623. (*Signed by*) H. V. A. Briscoe, G. R. Clemo, P. L. Robinson, R. D. Haworth.

SHUTT, GERALD REX, 57, Westwood Avenue, Blackpool, Lancashire. British. Chemistry Master, Blackpool Secondary School. M.A. (Cantab.), 2 Nat. Sci., Trip. I, 3 Nat. Sci., Trip. II. 1924–26, Chemistry Master, Tiffin Boys' School, Kingston-on-Thames. 1926 to date, Chemistry Master, Blackpool Boys' Secondary School. Since 1926 Teacher responsible for Chemical Trades Course, Blackpool Technical School. (*Signed by*) Charles T. Heycock, W. G. Palmer, W. H. Mills.

SUMMERBELL, LAURENCE JAMES, 192, Holland Rd., Kensington, W. 14. British. Science Master. B.Sc. (Lond.). Engaged on research work in Physical Chemistry for the past three years under Dr. J. Codrington Crocker at Chelsea Polytechnic with a view to taking the Ph.D. degree (Lond.). (*Signed by*) J. C. Crocker, Francis Arnall, Francis W. Hodges.

TADMAN, VERNON THORPE, Wissington Sugar Factory, nr. Stoke Ferry, Norfolk. British. Chemist. Associate of the Institute of Chemistry. Head Chemist, British Sugar Manufacturers, Ltd., Wissington Sugar Factory. (*Signed by*) H. Baines, G. Taylor, A. G. Crossley.

WARD, GEOFFREY STARKEY, 16, Haslemere Avenue, Bridlington, Yorkshire. English. Chemist and Druggist, M.P.S. Keenly interested in all new developments and discoveries. Student of Organic Chemistry. (*Signed by*) George A. Medley, H. England, H. C. Roberts.

The following Certificates have been authorised by the Council or presentation to ballot under Bye-Law I (2):

HOUBEN, HEINRICH HUBERT MARIA JOSEF, Berlin-Zehlendorf, Hauptstrasse 29. Deutschland. Ober-Regierungsrat und Mitglied der Biologischen Reichsanstalt Berlin-Dahlem, ausserordentlicher Professor der Chemie an der Universität Berlin. Magister artium liberalium und Dr.phil. (Bonn, 1898). Verfasser von etwa 100 Original-Mitteilungen in "Berichte der Deutschen chemischen Gesellschaft," *Journal für praktische Chemie, Chemiker-Zeitung,*

Arbeiten aus der Biologischen Reichs-Anstalt Berlin-Dahlem, etc., "Herausgeber der Methoden der organischen Chemie," 4 Bände (Leipzig, 2 Aufl., 1921–24, 3 Aufl. 1 u. 2 Bd., 1925–26), der "Fortschritte der Heilstoff-Chemie," 9 Bände, Bd. 1–4 erschienen (Berlin, 1926–28). (*Signed by*) Alex. McKenzie.

KURUP, POKIARATH KANNA, B.A., 2nd Lieutenant, Calicut (Malabar, India). British Indian. Managing Director, The Calicut Soaps and Candles Company, Ltd., Post Box 52, Calicut. B.A. (Madras University). Chemistry Lecturer. Asst. Supt. Govt. Soap Factory, Calicut. Three years' work on Oil Technology at the Ind. Inst. of Science, Bangalore. Joint author of a brochure on "Malabar Sardine Oil," with Dr. J. J. Sudborough and Dr. H. E. Watson as collaborators. 2nd Lieut. in His Majesty's Land Forces in India. (*Signed by*) J. L. Simonsen, V. M. Mascarenhas.

LOVASZ, NICHOLAS FRANCIS, 42, Engelwold Drive, Saxonwold, Johannesburg. British. Chemist. M.P.S. Chemist and Druggist, South Africa. Proprietor N. F. Lovasz & Co., Manufacturing and Analytical Chemists, Johannesburg. Manager, E. L. Ralling & Co., Pharmaceutical Chemists, Johannesburg. Manager, African Manufacturers & Importers, Ltd., Johannesburg. Manager, African Galenical & Research Laboratories, Johannesburg. Manager, African Mineral Products Co., Ltd., Johannesburg. Technical adviser to African Chemical Manufacturing Co., Ltd., Johannesburg. Now with Petersen, Ltd., Johannesburg. I am studying for a B.Sc. degree at University of South Africa. (*Signed by*) Max Rubin, Eugene Sachs.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

AMERICAN PHILOSOPHICAL SOCIETY. Proceedings. Vol. XXXVI, etc. Philadelphia 1897 +. (*Reference.*) [Wanting Vols. XLIX—LI, Vols. XLVII, XLVIII, and LV incomplete.]

From the Royal Photographic Society of Great Britain.

CLAYTON, WILLIAM. The theory of emulsions and their technical treatment. 2nd edition. London 1928. pp. xii + 284. ill. (Second copy.) 15*s*. net. (*Recd.* 2/5/28.)

From Mr. Emil Hatschek.

COWARD, HUBERT FRANK, and JONES, G. W. Limits of inflammability of gases and vapors. (U.S. Bureau of Mines. Bulletin 279.) Washington 1928. pp. viii + 99. ill. 20*c*. net. (*Recd.* 12/5/28.)

From Dr. H. F. Coward.

CRIVELLI, E. L'industria chimico-metallurgica del solfato di rame e le miscele cupriche funghicide ed anticrittogamiche. Milano 1928. pp. viii + 321. ill. *L*. 35. (*Recd.* 12/5/28.)

From the Publisher: Ulrico Hoepli.

EVANS, ULICK RICHARDSON. The corrosion of metals. 2nd edition. London 1926. pp. xvi + 260. ill. 15*s*. net. (*Recd.* 4/5/28.) From the Publishers: Messrs. Edward Arnold & Co.

GILDEMEISTER, EDUARD, and HOFFMANN, FRIEDRICH. Die

ätherischen Öle. 3rd edition. Vol. I. By EDUARD GILDEMEISTER. Miltitz bei Leipzig 1928. pp. xviii + 864. ill. (*Recd.* 12/5/28.)
From the Publishers: Herren Schimmel & Co.

HUNTER, ANDREW. Creatine and creatinine. London 1928. pp. viii + 282. (*Recd.* 17/4/28.)
From the Publishers: Messrs. Longmans, Green & Co.

INSTITUTO CIENTIFICO E INDUSTRIAL DEL SALITRE. Caliche. Vol. I, etc. Santiago (Chile) 1919 +. (*Reference.*) [Vols. I, V, and VII incomplete.]
From the Asociacion de Productores de Salitre de Chile.

JOURNAL MEDICO-BIOLOGIQUE. Year III, etc. Moscow 1927 +. [In Russian.] (*Reference.*) From the Biochemical Society.

MINES DEPARTMENT. *Safety in Mines Research Board.* Publications. Vol. II. London 1927. pp. x + 400. ill.
From the Department.

NEW SOUTH WALES. *Legislative Assembly.* Report of the Director-General of Public Health for the year 1926. Sydney 1928. pp. vi + 170. ill. (*Reference.*) 7*s.* 6*d.* net.
From the Director-General.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. VI. Part vii. Berlin 1928. pp. 1441 to 1680. *M.* 10. (*Recd.* 10/5/28.)
From the Publishers: Herren Urban & Schwarzenburg.

WHITE, WALTER P. The modern calorimeter. New York 1928. pp. 194. ill. $ 4 net. (*Recd.* 3/5/28.)
From the Publishers: The Chemical Catalog Co., Inc.

II. *By Purchase.*

ANKE, E. A. [and others]. Kunstseide. Berlin 1927. pp. viii + 354. ill. *M.* 33. (*Recd.* 19/4/28.)

AUTENRIETH, WILHELM. Laboratory manual for the detection of poisons and powerful drugs. 6th American edition, translated from the 5th German edition by WILLIAM H. WARREN. Philadelphia 1928. pp. xxvi + 698. ill. 30*s.* net. (*Recd.* 18/5/28.)

CONTEMPORARY DEVELOPMENTS IN CHEMISTRY. Lectures delivered at Columbia University in the special course in chemistry given in the summer session of 1926 on the occasion of the opening of the Chandler Chemical Laboratories. New York 1927. ill. 55*s.* net. (*Recd.* 23/4/28.)

DAMON, SAMUEL REED. Food infections and food intoxications. Baltimore, Md. 1928. pp. viii + 266. ill. 18*s.* net. (*Recd.* 17/5/28.)

HÄGGLUND, ERIK. Holzchemie. Leipzig 1928. pp. viii + 275. ill. *M.* 20. (*Recd.* 19/4/28.)

HANDBUCH DER ALLGEMEINEN CHEMIE. Edited by PAUL WALDEN and CARL DRUCKER. V. Mechanische Eigenschaften flüssiger Stoffe. By ROBERT KREMANN. Leipzig 1928. pp. xii + 597. ill. (*Reference.*) *M.* 49.

HARVEY, H. W. Biological chemistry and physics of sea water. Cambridge 1928. pp. x + 194. ill. 10*s.* 6*d.* net. (*Recd.* 17/5/28.)

KNOLL, RUDOLF. Synthetische und isolierte Riechstoffe und ihre Herstellung. 2nd edition by ALFRED WAGNER. Halle (Saale) 1928. pp. x + 257. ill. *M.* 16.50. (*Recd.* 19/4/28.)

NEUBURGER, MAXIMILIAN CAMILLO. Röntgenographie des Eisens und seiner Legierungen: mit besonderer Berücksichtigung der Ergebnisse anderer Untersuchungsmethoden. (Sammlung, Vol. XXX.) Stuttgart 1928. ill.

OSTWALD, WILHELM. Über Katalyse. (Ostwald's *Klassiker*, No. 200.) Leipzig 1923. pp. 55. *M.* 2. (*Recd.* 16/5/28.)

PANETH, FRITZ. Radio-elements as indicators and other selected topics in inorganic chemistry. New York 1928. pp. x + 164. ill. 12*s.* 6*d.* net. (*Recd.* 17/5/28.)

PRINGSHEIM, PETER. Fluorescenz und Phosphorescenz im Lichte der neueren Atomtheorie. (Struktur der Materie in Einzeldarstellungen.) 3rd edition. Berlin 1928. pp. vii + 357. ill. *M.* 25.20. (*Recd.* 19/4/28.)

QUARTERLY JOURNAL OF PHARMACY and allied sciences. Incorporating the Year-Book of Pharmacy. Vol. I, etc. London 1928 +. (*Reference.*) 30*s.* per annum.

ROGERS, LORE ALFORD, associates of. Fundamentals of dairy science. New York 1928. pp. 544. ill. 23*s.* net. (*Recd.* 17/5/28.)

RONA, PETER. Praktikum der physiologischen Chemie. Teil I and III. Berlin 1926 and 1928. pp. xi + 331, vi + 268. ill. *M.* 30. (*Recd.* 19/4/28.)

VANINO, LUDWIG, and SEITTER, EDUARD. Der Formaldehyd. 2nd edition by ARTHUR MENZEL. Wien 1927. pp. viii + 330. ill. *M.* 8.50. (*Recd.* 19/4/28.)

III. *Pamphlets.*

BANCROFT, WILDER DWIGHT. Contact catalysis. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 15.

BOGERT, MARSTON TAYLOR. Synthetic organic chemistry in the study of odorous compounds. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 30.

BRÖNSTED, JOHANNES NICOLAUS. The theory of velocity of

ionic reactions. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 29.

Browne, Charles Albert. Agricultural chemistry. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 17.

Clark, William Mansfield. Reversible oxidation-reduction reactions in organic systems. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 20.

Cohen, Ernst. The influence of pressure upon chemical transformations. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 12.

Daniels, Richard George. Cellulose lacquers: materials employed in their manufacture and hints for their use. London 1927. pp. iv + 21.

Fink, Colin Garfield. Physico-chemical principles in electro-metallurgical research. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 17. ill.

Franklin, Edward Curtis. Reactions in liquid ammonia. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 22.

Frazer, Joseph Christie Whitney. The direct measurement of osmotic pressure. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 20. ill.

Hopkins, B. Smith. Completing the periodic table. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 16. ill.

Imperial Institute. The mineral industry of the British Empire and foreign countries. Salt. London 1927. pp. 123.

—— —— Bromine. London 1928. pp. 19.

—— —— Diatomaceous earth. London 1928. pp. 55.

—— —— Iodine. London 1928. pp. 21.

—— Annual Report, 1927, by the Director to the Board of Governors. London 1928. pp. vi + 35.

Irvine, Sir James Colquhoun. Carbohydrates. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 28.

Johnson, Treat Baldwin. Chemistry of bacteria. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 14.

Kendall, Edward C. Oxidative catalysis [in the body]. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 20.

Kraus, Charles August. Radicals as chemical individuals. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 16.

Levene, Phoebus Aaron. Chemical relationships of sugars, optically active amino acids, hydroxy acids, and halogen acids.

(Contemporary Developments in Chemistry.) New York 1927. pp. ii + 26.

McCollum, Elmer Verner. Water-soluble vitamins. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 10.

Michaelis, Leonor. Permeability and electric phenomena in membranes. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 14.

Moore, Richard Bishop. The rare gases of the atmosphere. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 21.

Norris, James Flack. Chemical reactivity. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 13.

Reid, Ebenezer Emmet. Synthetic organic chemistry. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 8.

Scientific and Industrial Research, Department of. Report of test by the Director of Fuel Research on the Crozier retort installed by Mineral Oils Extraction, Limited, at Wembley. London 1928. pp. vi + 21. ill.

—— *Engineering Research.* Special Report No. 6. Properties of materials at high temperatures. III. Note on the "creep" of Armco iron. By H. J. Tapsell. London 1928. pp. iv + 11. ill.

—— *Food Investigation.* Special Report No. 31. The changes produced in meat extracts by the bacterium *Staphylococcus aureus.* Application of the alcohol titration methods. By Frederick William Foreman and George Stuart Graham-Smith. London 1928. pp. iv + 97.

—— —— Special Report No. 32. The control of reaction in cultures and enzymic digests. A comparison of the effects of certain salts upon changes in p_H and changes in absolute $[H^+]$ with reference to enzyme action. The rôle of creatinine in the control of reaction in cultures. By Frederick William Foreman and George Stuart Graham-Smith. London 1928. pp. iv + 27. ill.

Sherman, Henry Clapp. Quantitative research in the chemistry of nutrition. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 19.

Taylor, Hugh Stott. Catalysis and the mechanism of chemical reactions. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 16.

United States. *Department of Agriculture.* Technical Bulletin No. 20. A study of phylloxera infestation in California as related to types of soils. By R. L. Nougaret and Macy H. Lapham. Washington 1928. pp. 38. ill.

CHNOLOGY DEPT.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, June 7th, 1928, at 5.30 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Walter Johnson Cooper	May 7th, 1891.	May 27th.
Frederick Mollwo Perkin	June 18th, 1891.	May 24th.

Angus F. H. Ward was formally admitted a Fellow of the Chemical Society.

Certificates were read for the first time in favour of :

William Robert Hardy Hurtley, B.Sc., Ph.D., 28, Chestnut Road, West Norwood, S.E. 27.

Kolar Ramakrishnaiyer Krishnaswami, B.A., 21, Cromwell Road, South Kensington, S.W. 7.

John William Smith, B.Sc., 70, Verdant Lane, S.E. 6.

The following papers were read :

"Studies of valency. Part X. Electrometric titration of Vernon's α- and β-dimethyltelluronium bases." By F. L. GILBERT and T. M. LOWRY.

"Studies of valency. Part XI. Molecular conductivities and extinction coefficients of derivatives of *cyclo*telluropentane." By F. L. GILBERT and T. M. LOWRY.

"The action of diazo-salts on aromatic sulphonamides. Part II. The mechanism of the reaction and the constitution of the diazosulphonamides." By A. KEY and P. K. DUTT.

Ordinary Scientific Meeting, Thursday, June 21st, 1928, at 5.30 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

Reference was made to the loss sustained by the Society through

the death of Madyar Gopal Rau on May 21st, 1928, who was elected a Fellow on June 20th, 1918, and the PRESIDENT then called upon Professor J. R. Partington to make a statement.

Professor Partington said that the present month completed the twenty-fifth anniversary of Mr. Clifford's tenure of office as Librarian, and that it was unnecessary for him to explain to Fellows the many excellent qualities possessed by their Librarian. Many virtues went to the making of a good Librarian, and Mr. Clifford had them all. He was tactful, energetic and professionally efficient. The way in which he had organised the Library was worthy of great praise, especially when regard was paid to the fact that the books were distributed all over the building, for a large proportion of the books was in the basement, and they had now invaded the Council Room. That a book could be obtained so quickly from this scattered store was very creditable. In recent years increased demands had been made upon the services of the Librarian by reason of the availability of the Library to members of contributing Societies, but these demands had been met. He was sure that all Fellows who had had occasion to use the Library, either by personal visits or through the post, must have been assisted many times in obtaining information as to the literature of any particular subject in which they were interested. Professor Partington said he was sure all Fellows would associate themselves with him in expressing their appreciation of the services of their courteous and efficient Librarian.

The President conveyed to Mr. Clifford the thanks of the Council and Fellows for the able and efficient manner in which he had carried out the duties of his office during the past twenty-five years, and handed him a cheque from the Council and one from the Fellows, who had also given a clock.

In acknowledging these gifts, Mr. Clifford said he found it almost impossible to express in words his grateful thanks to the Council and Fellows for their generous recognition of his past services : his work as custodian of the Library had always been a pleasure, for there was joy in the chase after the ambiguous reference, and many a thrill in the pursuit of the elusive fact. Many of the inquiries received referred to matters of great variety and interest.

Mr. Clifford recalled that during the past twenty-five years the Library Committee had had but three Chairmen : Prof. Henry McLeod, who retired in 1904, Prof. J. Millar Thomson, who held the office for twenty years, and to whom he owed a great debt of gratitude for wise counsel and friendly advice, and Prof. Partington, who had been Chairman during the last four years. In acknowledging the friendly relations which had existed between Prof.

Partington and himself, Mr. Clifford thanked him most sincerely for the great amount of time and trouble he had so generously taken with regard to the presentation.

The PRESIDENT announced that

1. The following Address of Congratulation had been sealed in Council that afternoon, and would be presented by himself on the occasion of the Liebig-Wöhler Celebrations to be held at Darmstadt on July 7th, 1928 :—

The Chemical Society
to
the German Chemical Society, the Association of German Chemists, the Bunsen Society, and the Darmstadt Liebig House Committee

We, the President, Council, and Fellows of the Chemical Society, offer to our German Colleagues our sincerest congratulations on the auspicious occasion of the Liebig-Wöhler celebrations at Darmstadt and Giessen.

The great names of Liebig and Wöhler are known and revered throughout the civilised world as the founders of Organic Chemistry. The debt which humanity owes to Justus Liebig, the pioneer of agricultural chemistry and of the employment of artificial fertilisers in the cultivation of the soil, cannot be over-estimated. We in England owe to him the ideas which inspired the great work of Lawes and Gilbert at Rothamsted. The labours of the chemist in supplying artificial fertilisers to the farmers are of fundamental importance to-day, since without them prosperity would decline and famine soon face the vast and ever-growing population of the world.

We welcome with the liveliest satisfaction the preservation and restoration of the house in Darmstadt where Liebig was born. It will become one of the holy places of our science, which all chemists will visit.

Who can think of Liebig without recalling the name of his great collaborator, Wöhler? And who can think of Wöhler without recalling that it was he who first demonstrated the power of man to rival the operations of nature? Physiology, Biochemistry, Chemotherapy, and Medicine, as we understand these sciences to-day, became possible only after the work of Wöhler, who thus transcended Hippocrates and Galen and made Chemical Science the corner stone of the edifice of Life.

The co-operation of Liebig and Wöhler, who, beginning as rivals, soon became friends and collaborators, forms one of the happiest examples of good sense and just partnership known in science. In common with chemists throughout the world we of the Chemical

Society unite in wishing our German fellow scientists a very happy and successful meeting in Darmstadt.

Signed on behalf of the Chemical Society,

(L.S.)	JOCELYN THORPE,	*President.*
	T. SLATER PRICE,	*Treasurer.*
	C. S. GIBSON T. S. MOORE,	*Secretaries.*
	F. G. DONNAN,	*Foreign Secretary.*

Sealed in Council this Twenty-first Day of June, One Thousand Nine Hundred and Twenty-eight.

2. The Council had decided that the Ordinary Scientific Meetings next Session should be held at 8.0 p.m.

J. G. A. Griffiths was formally admitted a Fellow of the Chemical Society.

Certificates were read for the first time in favour of:

Alfred Aaron Levi, M.Sc., 2, Ormonde Terrace, Regent's Park, N.W. 8.
Catherine Eleanor Mallen, M.A., The Red House, Beechwood Terrace, Sunderland.
Martha Elizabeth Murray, B.Sc., A.I.C., 90, Channel Street, Galashiels, Selkirkshire.

Dr. E. H. Farmer and Dr. E. E. Turner were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows:

Leslie Charles Baker, M.Sc.
Margaret Ethel Birt, B.Sc.
Charles Edwin Burnett.
Thomas Ballantyne Clerk, B.Sc.
Julian K. Dale, A.B., M.A., Ph.D.
Kanai Lal Dey, M.Sc.Tech.
John Chaldecott Everett.
Percy James Fay, M.A.
Ramjiban Ghose, B.Sc.
John Gordon Green.
John Arthur Greene.
Hedley Harrison.
Edgar Henley Hecker, B.Sc.
Heinrich Hubert Maria Josef Houben, Dr.Phil.
William Deacon Jarvis.
Robert Haynes Jeffers.
Albert William Kent, B.Sc.
Frederic Barry Kipping, B.A., Ph.D.
Pokiarath Kanna Kurup, B.A.
Nicholas Francis Lovasz.
Charles Bernard Maddocks, A.I.C.
Spencer Mort, M.D., M.S., F.R.C.S.
Bertram Lionel Nicol, M.A.
Victor Harold Perkoff.
Edwin Arnold Piper.
Robert Anthony Robinson, M.Sc.
John Poinier Rogers.
Leonard Alfred Sayce, M.Sc., Ph.D., A.I.C.
Gerald Rex Shutt, M.A.
Laurence James Summerbell, B.Sc.
Vernon Thorpe Tadman, A.I.C.
Geoffrey Starkey Ward.

The following papers were read :

"Acid and salt effects in catalysed reactions. Part XV. The catalytic activity of hydrochloric acid in the hydrolysis of ethyl acetate." By H. M. DAWSON and W. LOWSON.

"The chemistry of the three-carbon system. Part XVIII. Quantitative investigations on the $\alpha\beta$–$\beta\gamma$ change in unsaturated acids; observations on the reduction of sorbic acid and a new synthesis of pyroterebic acid." By A. A. GOLDBERG and R. P. LINSTEAD.

"The influence of structure on the solubilities of ethers. Part I. Aliphatic ethers." By G. M. BENNETT and W. G. PHILIP.

"The influence of structure on the solubilities of ethers. Part II. Some cyclic ethers." By G. M. BENNETT and W. G. PHILIP.

The Council has made the following Grants from the Research Fund :

	£	s.	d.
Aromatic substitution. J. W. Baker. (Leeds Univ.)	8	0	0
Production of fat from carbohydrates by fermentation. H. H. Barber. (Univ. Coll., Nottingham)	8	0	0
Aliphatic and cyclic sulphides (*contd.*). G. M. Bennett. (Sheffield Univ.)	8	0	0
Synthesis of some β-benziminazolylethylamines. B. C. Chatterjee. (Manchester Univ.)	12	0	0
$\alpha\beta$-Dicyano esters of aliphatic acids (*contd.*). P. K. Dutt. (Leeds Univ.)	8	0	0
Effect of substituents on the inhibition of organic reactions. G. M. Dyson. (Loughborough Coll.)	8	0	0
Simple unsaturated aliphatic ketones. E. N. Eccott. (Imperial Coll.)	8	0	0
Introduction of the triphenylmethyl group into phenols. D. V. N. Hardy. (Univ. Coll., Southampton)	8	0	0
The structure of the Grignard reagent. H. H. Hatt. (Univ. Coll., Southampton)	5	0	0
Experiments on the *iso*quinoline series. R. D. Haworth. (Armstrong Coll.)	8	0	0
Effect of polar and steric factors on the mobility of semicyclic triad systems. J. W. T. Jones. (Imperial Coll.)	8	0	0
Condensation of aldehydes with glycine anhydride (*contd.*). P. G. Marshall and W. P. Dickinson. (Leeds Univ. and Watford Grammar School)	5	0	0
Orientation of substituent groups in 5-hydroxyhydrindene. I. G. Nixon. (Cambridge Univ.)	8	0	0
Substituted adipic acids and their derivatives. (Miss) M. P. Oommen. (Imperial Coll.)	10	0	0
Effect of the so-called "strainless" rings on the carbon tetrahedral angle (*contd.*). K. A. N. Rao. (Imperial Coll.) ...	12	0	0
Constitution of Sparteine. R. Raper. (Armstrong Coll.) ...	8	0	0

	£	s.	d.
Equilibrium mixtures of unsaturated methyl ketones (*contd.*). R. D. Satchell. (Imperial Coll.)	8	0	0
Synthesis of glucosides of pelargonidin. T. R. Seshadri. (Manchester Univ. and Univ. Coll., London)	20	0	0
The condensation product of fluorene with acetone. S. H. Tucker and J. W. Nicol. (Glasgow Univ.)	5	0	0
Synthesis of cyclic compounds (*contd.*). I. Vogel. (Imperial Coll.)	10	0	0
Mechanism of the oxidation of fatty acids by enzymes secreted by mould fungi (*contd.*). T. K. Walker. (Tech. Coll., Manchester)	8	0	0
Additive properties of conjugated compounds. F. L. Warren. (Imperial Coll.)	8	0	0
Spatial structure of *cyclo*paraffins. W. A. Wightman. (Leeds Univ.)	16	0	0
	£207	0	0

THE LIBRARY.

The Library will be closed for Stocktaking from Monday, August 6th, until Saturday, August 18th (inclusive). During the following four weeks (August 20th to September 15th), the Library will close daily at 5 p.m.

List of Papers, or Abstracts thereof, received between May 17th and June 21st, 1928. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"The preparation and properties of pure phosphorus trioxide." By C. C. Miller.

"The rotatory dispersion of derivatives of tartaric acid. Part III. Diacetyltartaric acid and its esters." By P. C. Austin.

"The rotatory dispersion of derivatives of tartaric acid. Part IV. Dipropyl and dibutyl tartrates." By P. C. Austin.

"The decomposition of acetyl peroxide and the mechanism of Kolbe's electrosynthesis." By O. J. Walker.

"An electronic theory of catalytic oxidation and reduction." By A. W. Wellings.

"Syntheses in the diphenyl series." By L. E. Hinkel and D. H. Hey.

"The velocity of the acid hydrolysis of cotton cellulose by hydrochloric acid, alone and in presence of alkali chloride." By E. Hunter.

"Neodymium selenate." By J. A. N. FRIEND and A. A. ROUND.

"On the possibility of ring-chain valency tautomerism, and of a type of mobile-hydrogen tautomerism analogous to the Wagner–Meerwein re-arrangement. Part III. Orientation of some cyclic derivatives of phorone." By C. K. INGOLD and C. W. SHOPPEE.

"The production of fat by a species of *penicillium* from carbohydrate and similar media. Part I. Glucose and sucrose." By H. H. BARBER.

"Halogen derivatives of *o*- and *p*-azophenol." By L. HUNTER and R. S. BARNES.

"The decomposition of bornyl benzene- and naphthalene-sulphonates by heat. The products of hydrolysis of bornyl and menthyl benzene- and naphthalene-sulphonates. The influence of solvents on the temperature of decomposition of these bornyl and menthyl sulphonates." By T. S. PATTERSON and I. M. MCALPINE.

"The influence of solvents on the rotation of optically active compounds. Part XXV. Bornyl benzenesulphonate, bornyl naphthalene-α-sulphonate, and bornyl naphthalene-β-sulphonate in various solvents." By T. S. PATTERSON and I. M. MCALPINE.

"The catalytic hydrogenation of different types of unsaturated compounds. Part III. The hydrogenation of conjugated systems." By S. V. LEBEDEV and A. O. YAKUBCHIK.

"The action of nitrous acid on amino-compounds. Part II. Aliphatic amino-acids." By T. W. J. TAYLOR.

"A contribution to the chemistry and chemotherapy of aryl arsenoxides and dichloroarsines." By G. NEWBERY and M. A. PHILLIPS.

"Studies of dynamic isomerism. Part XXVIII. Absorption spectra of the ketonic and enolic forms of an α-diketone." By T. M. LOWRY and H. MOUREU.

"Acid and salt effects in catalysed reactions. Part XVI. Catalytic effects in the iodination of mesityl oxide." By H. M. DAWSON and A. KEY.

"Styrylpyrylium salts. Part X. Anhydropyrylium bases and *spiro*pyrans derived from dibenzyl ketone." By R. DICKINSON, I. M. HEILBRON, and F. O'BRIEN.

"The hydrolysis of guanidine carbonate." By J. BELL.

"The Walden inversion." By H. N. K. RÖRDAM.

"The preparation of some halogenoaminophenols. Part I. Mixed tetrahalogen derivatives of *o*-azophenol. Part II. Halogen

derivatives of *p*-hydroxyazobenzene." By L. HUNTER and R. S. BARNES.

"Studies in the pyrazole series. Part I. Anilopyrine and antipyrine and the relative migration of the hydroxyl group in anilopyrine alkylhydroxides." By P. K. DUTT.

"Derivatives of ψ-indoxyl*spirocyclo*hexane." By R. L. BETTS and S. G. P. PLANT.

"The action of disilicon hexachloride on ether." By F. S. KIPPING and R. A. THOMPSON.

"The constitution of magnesium acetate solutions. Part II. Evidence from vapour pressures." By E. A. GOODE, N. S. BAYLISS, and A. C. D. RIVETT.

"Note on the spectrum of the chemiluminescence accompanying the oxidation of ether, acetaldehyde, propaldehyde, and hexane." By H. J. EMELÉUS.

"*N*-Methyl derivatives of 2-phenylnaphthalene-1 : 3-diamine." By C. S. GIBSON, W. S. KENTISH, and J. L. SIMONSEN.

"10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part VI. Compounds containing two nitrogen and two arsenic atoms in six- and five-ringed systems." By C. S. GIBSON and J. D. A. JOHNSON.

"By-products of the Gattermann aldehyde reaction." By F. BELL and T. A. HENRY.

"2 : 4 : 7-Trinitrofluorenone." By F. BELL.

"The photochemical decomposition of glyoxal vapour." By R. G. W. NORRISH and J. G. A. GRIFFITHS.

"Cobalt allylamines : a supposed co-ordination number of eight for cobalt." By W. R. BUCKNALL and W. WARDLAW.

"A resolution of benzoin." By I. V. HOPPER and F. J. WILSON.

"Synthetical experiments on the aporphine alkaloids. Part IV. A synthesis of morphothebaine dimethyl ether." By J. M. GULLAND and R. D. HAWORTH.

"Hydrolysis in solutions of potassium laurate as measured by extraction with benzene." By J. W. MCBAIN and M. EATON.

"Per-iodide equilibria in aqueous and salt solutions." By J. S. CARTER.

"The vacuum stability test : calculation of gas volume." By E. J. VAUGHAN.

"The action of magnesium phenyl bromide on methyl *o*-cyanobenzoate. 1 : 3-Diphenyldihydro*iso*indole." By D. R. BOYD and D. E. LADHAMS.

"The rotatory dispersion of certain isomeric butyl esters of *l*-mandelic acid." By C. E. Wood, A. E. Chrisman, and S. D. Nicholas.

"The nature of the alternating effect in carbon chains. Part XXVIII. The preparation and some properties of benzyl fluoride." By C. K. Ingold and E. H. Ingold.

"The nature of the alternating effect in carbon chains. Part XXIX. Further experiments bearing on the problem of the *ortho–para* ratio in aromatic substitution." By C. K. Ingold and C. C. N. Vass.

"Electrometric titration curves of dibasic acids. Part II. β-Substituted glutaric acids." By R. Gane and C. K. Ingold.

"Aminobenzthiazoles. Part X. The mobility of the 1-amino-3-methylbenzthiazole system." By R. F. Hunter and E. R. Styles.

"Nitration of 4-halogeno-2-hydroxy- and 2-halogeno-4-hydroxybenzaldehydes." By H. H. Hodgson and T. A. Jenkinson.

"The formation of 2-substituted benziminazoles." By M. A. Phillips.

"The quadrivalency of selenium. Part I. 4-Carboxydiphenyl- and *p*-carboxyphenyl methyl selenoxides." By W. R. Gaythwaite, J. Kenyon, and H. Phillips.

"The quadrivalency of selenium. Part II. The simple halogen derivatives and the dihydroxide of 4-acetamidodiphenyl selenide." By W. R. Gaythwaite, J. Kenyon, and H. Phillips.

"The quadrivalency of selenium. Part III. The instability of the compounds of quadrivalent selenium derived from phenyl methyl and phenyl ethyl selenides and phenyl- and *p*-tolyl-selenoglycollic acids." By O. K. Edwards, W. R. Gaythwaite, J. Kenyon, and H. Phillips.

"The solubility of potassium ferricyanide in water between 0° and 100°." By J. A. N. Friend and W. N. Smirles.

"The effects of the spatial position of substituent groups on acidic strength." By D. H. Hey.

"The conditions determining the thermodynamic stability of cyanohydrins of carbonyl compounds. Part I. Some effects of (*a*) substitution in aromatic aldehydes and (*b*) ring formation." By A. Lapworth and R. H. F. Manske.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

BECK, CONRAD. The microscope. 2 vols. London 1923–24. pp. 144, 232. ill. (*Recd.* 11/6/28.) From Messrs. R. & J. Beck.

COLLOID SYMPOSIUM MONOGRAPH. Papers presented at the fifth National Symposium on Colloid Chemistry. New York 1928. pp. 394. ill. 27*s.* net. (Second copy.) (*Recd.* 15/6/28.) From Mr. E. Hatschek.

HOLMES, HARRY N. Laboratory manual of colloid chemistry. 2nd edition. New York 1928. pp. xviii + 228. ill. (Second copy.) (*Recd.* 15/6/28.) From Mr. E. Hatschek.

KUHN, W. Physikalisch-chemische Übungen. Zürich 1928. pp. 102. ill. (*Recd.* 7/6/28.) From the Author.

NATIONAL BENZOLE ASSOCIATION and UNIVERSITY OF LEEDS. *Joint Benzole Research Committee.* Third report. London 1926. pp. 204. ill. (*Reference.*) From the Association.

ORGANIC SYNTHESES. An annual publication of satisfactory methods for the preparation of organic chemicals. Vol. VIII. New York 1928. pp. viii + 142. ill. 10*s.* net. (*Recd.* 19/6/28.) From the London Publishers: Messrs. Chapman & Hall.

PARTINGTON, JAMES RIDDICK. The composition of water. London 1928. pp. viii + 106. ill. 1*s.* 6*d.* net. (*Recd.* 14/6/28.) From the Author.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Engineering Research.* Special Report No. 3. The causes of failure of wrought iron chains. By HERBERT JOHN GOUGH and ALFRED JOHN MURPHY. pp. x + 167. ill. (*Reference.*) 7*s.* 6*d.* net. From the Department.

UNIVERSITY OF ILLINOIS. Chemistry Department Bulletin. Vol. I, etc. Urbana, Ill. 1924 +. (*Reference.*) From the Department.

II. *By Purchase.*

ASLIB DIRECTORY, The. A guide to sources of specialized information in Great Britain and Ireland. Edited by GEORGE FREDERICK BARWICK. London 1928. pp. xvi + 425. (*Reference.*) 21*s.* net.

COHEN, JULIUS BEREND. Organic chemistry for advanced students. 5th edition. 3 vols. London 1928. pp. viii + 427, viii + 487, viii + 440. ill. (*Reference.*) 54*s.* net.

GARDNER, HENRY A. Physical and chemical examination of paints, varnishes, lacquers and colors. 4th edition. Washington 1927. pp. 784 + [278]. 55*s*. net. (*Recd*. 11/6/28.)

HANDBUCH DER PHYSIK. Edited by HANS GEIGER and KARL SCHEEL. Vol. III. Mathematische Hilfsmittel in der Physik. Edited by HANS THIRRING. Berlin 1928. pp. xiv + 647. ill. *M*. 59.50. (*Recd*. 11/6/28.)

HOGBEN, LANCELOT T. The comparative physiology of internal secretion. Cambridge 1927. pp. viii + 148. ill. 10*s*. 6*d*. net. (*Recd*. 21/6/28.)

LIND, SAMUEL COLVILLE. The chemical effects of alpha particles and electrons. 2nd edition. New York 1928. pp. 252. ill. 15*s*. 6*d*. net. (*Recd*. 23/5/28.)

SMITH, ERNEST ELLSWORTH. Aluminium compounds in food, including a digest of the report of the Referee Board of Scientific Experts on the influence of aluminium compounds on the nutrition and health of man. New York 1928. pp. xii + 378. 31*s*. 6*d*. net. (*Recd*. 24/5/28.)

[UNITED STATES] NATIONAL RESEARCH COUNCIL. *Subcommittee on Chemiluminescence*. Chemiluminescence. (National Research Council Bulletin No. 59.) Washington 1927. pp. 62. 4*s*. 6*d*. net. (*Recd*. 16/6/28.)

WALL, EDWARD JOHN. Intensification and reduction : a critical résumé of all known methods with reference to the original monograph. Boston, Mass. 1927. pp. 40. ill. 5*s*. net. (*Recd*. 16/6/28.)

WILSON, JOHN ARTHUR. The chemistry of leather manufacture. 2nd edition. Vol. I. New York 1928. pp. 495. ill. 42*s*. net. (*Recd*. 23/5/28.)

III. *Pamphlets*.

AERONAUTICAL RESEARCH COMMITTEE. Reports and Memoranda No. 1113. Closed vessel explosions of carbon monoxide, oxygen and nitrogen mixtures. By R. W. FENNING. London 1928. pp. 13. ill.

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research*. Bulletin No. 34. The biological control of prickly pear in Australia. By A. P. DODD. Melbourne 1927. pp. 44. ill.

—— —— Bulletin No. 35. Kraft pulp and paper from *Pinus insignis*. By L. R. BENJAMIN [and others]. Melbourne 1928. pp. 32.

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Pamphlet No. 7. The export of oranges. By W. RANGER and WILLIAM JOHN YOUNG. Melbourne 1928. pp. 12. ill.

BRITISH RESEARCH ASSOCIATION FOR THE WOOLLEN AND WORSTED INDUSTRIES. Publication No. 94. A survey of the production and utilisation of wool. By SYDNEY GEORGE BARKER and ARNOLD FROBISHER. Leeds 1928. pp. 10.

EMPIRE MARKETING BOARD. The chemistry of wine making: a report on oenological research. By JOHN THEODORE HEWITT. London 1928. pp. 57.

IMPERIAL CHEMICAL INDUSTRIES. Liquid chlorine. London [1928]. pp. 13. ill.

MINER LABORATORIES. *Furfural Department.* Bulletin No. 2. Furfural and its derivatives. Chicago 1925. pp. iv + 53.

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 42. Firedamp explosions: the projection of flame. Part II. By MAURICE JOHN BURGESS. London 1928. pp. 8. ill.

PLENDERLEITH, HAROLD JAMES. Laboratory notes: The preservation of book-bindings. (From the *British Museum Quarterly*, 1927, 2.)

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Fuel Research.* Technical Paper No. 20. The Thomas recording gas calorimeter. London 1928. pp. vi + 42. ill.

UNITED STATES. *Department of Commerce.* Bureau of Standards. Scientific Paper No. 570. Thermal expansion of alloys of the "stainless iron" type. By PETER HIDNERT and W. T. SWEENEY. Washington 1928. ill.

WEINIG, ARTHUR J., and PALMER, IRVING A. The trend of flotation. 2nd edition. (From the *Quart. Colo. School Mines*, 1928, 23.)

WELLS, HARRY GIDEON. Immunology as a branch of chemistry. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 17.

WILSON, JOHN ARTHUR. A development in the chemistry of sanitation. (Contemporary Developments in Chemistry.) New York 1927. pp. ii + 24.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Extraordinary General Meeting, Thursday, October 18th, 1928, at 8 p.m. Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The notice convening the meeting having been read, the PRESIDENT stated that in February, 1927, the Council had appointed a Committee to consider the provision of Committees, the election of Chairmen of Committees, the Chairmen of the Library and Publication Committees and also of the Bureau (if a Fellow) being *ex-officio* on the Council, and in what other ways the Bye-Laws should be altered. The Committee had met on several occasions, and its final report was received and adopted by the Council on June 21st, 1928.

Professor H. B. Baker then proposed that the additions to, and alterations of, the Bye-Laws, as detailed in the notice circulated to all Fellows resident in the United Kingdom, be adopted; the motion was seconded by Professor J. C. Philip.

Dr. R. H. Pickard asked for information as to what was involved in the proposed additions and alterations, and Professor C. S. Gibson made the following statement:

The present Bye-Laws contain no provision for the appointment of Committees or for framing Standing Orders. Under the new Bye-Law (to be numbered XIII) the Council seeks power (*a*) to appoint Committees; (*b*) in the case of the Library Committee, to invite each Society contributing to the upkeep of the Library to appoint a representative to serve on the Committee; (*c*) to co-operate with other similar bodies in carrying out schemes where combined action is necessary and to appoint Fellows as representatives to serve on any Joint Committee; (*d*) to delegate to such Joint Committee authority to incur expenditure in furtherance of such scheme, subject to such conditions as the Council may determine; (*e*) for the Bureau of Chemical Abstracts to be considered as a Joint Committee; and (*f*) for the Chairman of the Library Committee and of the Publication Committee and also the Chairman of

the Bureau (if a Fellow, or if not, a Fellow to be appointed by the Bureau) to be *ex-officio* Members of Council.

Under the new Bye-Law (to be numbered XIV) the Council seeks power to frame Standing Orders.

The proposed alterations give the Council power to make exceptions in special circumstances in dealing with the resignation and removal of Fellows; they provide that a retiring Vice-President shall not be eligible for re-election until after the lapse of one year, and that Ordinary Members of Council shall remain during their term of office in the category in which they are elected. Those Bye-Laws affected by the suggested new Bye-Laws are to be regularised, a verbal alteration in the Bye-Law dealing with the reading of certificates of candidates for election is to be made, and Bye-Law XX, which is no longer operative, is to be removed,

The motion was then put to the meeting and carried unanimously.

At the Ordinary Scientific Meeting which followed the PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Gilbert J. Avey	Feb. 16th, 1922.	Aug. 8th.
Reginald A. Berry	Dec. 1st, 1898.	Oct. 12th.
Egerton C. Grey	Feb. 16th, 1922.	Aug. 10th.
William P. L. Hope	Dec. 4th, 1924.	Aug. 28th.
Henry R. Hoyles	April 4th, 1889.	May 7th.
Wilfred Irwin	Dec. 6th, 1883.	April 11th.
Alfred W. Mond	May 5th, 1927.	Sept. 12th.
Theophilus Pitt	Feb. 16th, 1882.	Aug. 30th.
Charles Platt	Feb. 16th, 1893.	June 14th.
Maurice S. Salamon	Dec. 3rd, 1908.	Sept. 19th.
Alfred Smetham	Dec. 16th, 1875.	Oct. 11th.
Charles W. Walker Tisdale	June 16th, 1898.	April 13th.

It was announced that:

1. The following presentations had been made to the Society:

By the President, medals struck in commemoration of the Liebig-Wöhler Celebrations.

By Dr. E. W. Maddison, the Pasteur Medal.

By Prof. H. E. Armstrong, photograph of group of chemists.

By Lady Tilden, various framed photographs.

2. The Annual Chemical Dinner would be held in the Connaught Rooms, Great Queen Street, W.C. 2, on Friday, November 9th, 1928, at 7 for 7.30 p.m. Tickets, price 12*s.* 6*d.* each, for lady or gentleman, including gratuities, but not wines, can be obtained from Mr. F. A. Greene, Honorary Secretary, Annual Chemical Dinner, 1928, Chemical Industry Club, 2, Whitehall Court, S.W. 1.

3. A circular letter had been received regarding "The New International Association for Testing Materials." This Association was formed at a Congress held in Amsterdam in 1927. In order to secure adequate British representation on the Association, a British Committee has been formed consisting of representatives appointed by a number of the most important British Institutions and Societies.

This Committee has appointed Dr. W. Rosenhain, F.R.S., as British representative on the Permanent Committee of the Association, of which body he has been elected as a Vice-President, and four International Committees have been appointed to deal with the four Sections into which the work of the Association is to be divided, namely, (*a*) Metals, (*b*) Inorganic non-metallic materials, (*c*) Organic materials, and (*d*) Methods of testing.

The annual membership subscription is 10*s*. for individuals, and not less than £1 for societies, firms, and other corporate bodies.

Further particulars of the Association, and forms of applications for membership, can be obtained from Mr. G. C. Lloyd, Honorary Secretary of the British Branch, 28, Victoria Street, S.W. 1.

The following were formally admitted Fellows of the Chemical Society: M. E. Birt, V. M. Thorn, B. Butterworth, W. L. Whiteley, A. Pollard, S. Murakami.

Certificates were read for the first time in favour of:

Arthur Donald Ainley, B.Sc., Highfield House, Dobcross, Oldham.
Nelson Alcock, Messrs. C. C. Wakefield & Co., Ltd., Spring Street, Sydney.
Rupchand Lilaram Alimchandani, M.Sc., Karnatak College, Dharwar, India.
Simon Amstell, 3, Ely Terrace, Mile End Road, E. 1.
William Rogie Angus, M.A., B.Sc., A.I.C., 35, Guildford Street, Russell Square, W.C. 1.
William Brookes, 473, Halliwell Road, Bolton.
Duncan Arthur Campbell, M.Sc.Tech., B.Sc., A.I.C., Roseleigh, Speldhurst, Tunbridge Wells.
Charles Ernest Chard, B.Sc., 53, Eleanor Road, Stratford, E. 15.
Joseph George Cockburn, B.Sc., 34, Cambridge Terrace, Gateshead-on-Tyne.
George Cecil Crummack, 130, Ash Road, Headingley, Leeds.
William Leslie Dixon, 14, Melrose Road, Merton Park, S.W. 19.
Shankar Magnath Godbole, Prof., M.Sc., College of Science, Nagpur, C.P., India.
John Grant Gordon, 23, Jennor House, Hunter Street, W.C. 1.
Frank Samuel Henry Head, B.Sc., 149, Fillebrook Road, Leytonstone, E. 11.
Rosalind Venetia Henley, 9, Oxford Square, W. 2.
Ralph Anderson Jackson, B.A., 46, St. James's Road, Carlisle.
Zenab Kamil, Bedford College, Regent's Park, N.W. 1.
Julian Maynard Leonard, 1, Lindfield Gardens, Hampstead, N.W. 3.
Charles Carr Marginson, B.Sc., The Homestead, Whitestakes, Preston.
Kottiazath Narayana Menon, M.Sc., 55, Parliament Hill, N.W. 3.
Albert Edward Oxford, M.Sc., Ph.D., 7, Talbotville Road, Broad Green, Liverpool.

Ronald Postell, B.A., 130, Saint John's Avenue, Bridlington.
Alfred Russell, B.Sc., The Queen's University, Belfast.
Sidney John Saint, B.Sc., A.I.C., Government Laboratory, Barbados.
Rupert Henry Saunders, Littlecot, Windsor Road, Slough.
Harry Selikman, B.Sc., 46, Harpur Avenue, Benoni, Transvaal.
Kantilal Maganlal Sheth, M.Sc., Shree Shakti Alkali Works, Dhrangadhra, Kathiawad, India.
Henry George Simpson, B.Sc., 21, Truro Road, Wood Green, N. 22.
William Solomon, B.Sc., 14, Finsen Road, S.E. 5.
Cyril Gordon Sumner, M.Sc., 53, St. Thomas' Road, Chorley.
Ramsimha Thakur, M.Sc., Mandla Fort, Mandla, C.P., India.
Arthur Ernest Vaughan, jun., Quebec Lodge, Regent Road, Birkdale, Southport.
George Reginald Webster, 8, Marlborough Road, Bearwood, Birmingham.
Margaret Katharine White, M.Sc., Northern Polytechnic, N. 7.
William Dudley Williams, B.Sc., F.I.C., Cia Industrial y Comercial de Petroleo, Canadon Rosales, Comodoro Rivadavia, Argentine.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

Alexander Lipworth, 23, Kerk Street, Johannesburg.
Walter William Saw, B.Sc., c/o Vacuum Oil Co., Ltd., Perth, W. Australia.

The following papers were read:

"Studies of dynamic isomerism. Part XXVIII. Absorption spectra of the ketonic and enolic forms of an α-diketone." By T. M. Lowry, H. Moureu, and C. A. H. MacConkey.

"Explosions in closed cylinders. Part I. Methane-air explosions in a long cylinder. Part II. The effect of length of the cylinder." By W. A. Kirkby and R. V. Wheeler.

"Explosions in closed cylinders. Part III. The manner of movement of flame." By O. C. de C. Ellis and R. V. Wheeler.

"Pentanitroaniline." By B. Flürscheim and E. L. Holmes.

LECTURE.

The first Liversidge Lecture, entitled "Physical Chemistry in the Service of Biology," will be delivered by Professor F. G. Donnan, C.B.E., D.Sc., F.R.S., in the Lecture Hall of the Institution of Mechanical Engineers, Storey's Gate, S.W. 1, on Thursday, November 29th, 1928, at 5.30 p.m. Admission Free. Tickets will not be issued.

ANNUAL REPORTS.

The price of the Annual Reports for 1928, Vol. XXV, will be 5*s.* 6*d.* to those Fellows who apply by December 31st, 1928.

Application should be made to the Assistant Secretary, and must be accompanied by a remittance.

FARADAY LECTURES.

The Faraday Lectures which have been delivered before the Society since the Lectureship was founded in 1868 are now published in volume form. The volume contains twelve Lectures, with portraits of the Lecturers, an obituary notice of Faraday, and a short history of the foundation of the Lectureship. The volume can be obtained from the Assistant Secretary, and the price to Fellows is 5*s*. 6*d*. post free.

ABSTRACTS "A" FOR 1929.

(Printed on one side of the paper only)

Abstracts "A" (Pure Chemistry) for 1929, printed on one side of the paper only, will be issued at the reduced price of £1 to those Fellows who make application to the Assistant Secretary by December 31st, 1928. A remittance for £1 must accompany each application, and Fellows should state, when ordering, if they wish to receive the Abstracts gummed or ungummed.

THE CHEMICAL SOCIETY AS ITS OWN PUBLISHER.

The Council has decided that as from December 31st, 1928, the Society shall act as its own Publisher. All communications regarding the publications should, as from that date, be addressed to the Assistant Secretary, The Chemical Society, Burlington House, Piccadilly, W.1.

PUBLICATIONS OF OTHER SOCIETIES.

Fellows of the Chemical Society who are not members of the Society of Chemical Industry, the American Chemical Society, or the Dutch Chemical Society, may procure the publications of these Societies for 1929 at the following prices:

SOCIETY OF CHEMICAL INDUSTRY

(*a*) Abstracts in Applied Chemistry (exclusive of Index). £1 10*s*. post free
(*b*) Annual Reports of the Progress of Applied Chemistry for 1928 . . . . . 10*s*. ,,
(*c*) Abstracts in Applied Chemistry (printed on one side of the paper only) . . . . . £2 ,,

Application should be made direct to the Secretary, Society of Chemical Industry, 46 and 47 Finsbury Square, E.C. 2, and should reach him by 31st December, 1928. Fellows resident abroad should apply by return of mail.

AMERICAN CHEMICAL SOCIETY

(*a*) Journal of the American Chemical Society . . . $7·25 post free
(*b*) Chemical Abstracts . . . . . $7·75 ,,
(*c*) Industrial and Engineering Chemistry . . . $7·25 ,,
Price for all three Journals : $18·00 post free.
Price for any two Journals : $13·50 post free.
(*d*) Chemical Reviews . . . . . $4·50 ,,
Application should be made direct to the Secretary, American Chemical Society, Mills Building, Washington, D.C., U.S.A., and should reach him by December 31st, 1928.
(*e*) Journal of Physical Chemistry . . . . . $8·00 post free
Application should be made to the Journal of Physical Chemistry, Ithaca, N.Y., U.S.A.

NEDERLANDSCHE CHEMISCHE VEREENIGING

(*a*) Chemisch Weekblad . . . . . Fl. 10·00 post free
(*b*) Recueil des travaux chimiques des Pays Bas . . Fl. 11·50 ,,
Application to be made to Dr. A. D. Donk, Nederlandsche Chemische Vereeniging, Verspronckweg, 100, Haarlem, Holland.

NOTE.—*A remittance, made payable to the Society concerned, must accompany each application.*

RESEARCH FUND.

A meeting of the Research Fund Committee will be held in December next. Application for Grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Saturday, December 1st, 1928. Applications from Fellows will receive prior consideration.

All persons who received Grants in December, 1927, or in December of any previous year, whose accounts have not been closed by the Council, are reminded that Reports must be returned by December 1st.

List of Papers, or Abstracts thereof, received between June 21st and October 18th, 1928. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Mineral trees: their formation and significance." By M. COPISAROW.

"The influence of solvents on the rotation of optically active compounds. Part XXVI. The optical activity of malic acid in the presence of sodium molybdate." By T. S. PATTERSON and C. BUCHANAN.

"Colour and constitution. Part IV. The absorption spectra of nitrophenylhydrazones in alcohol and alcoholic potash." By H. H. Hodgson and K. E. Cooper.

"Determination of the pressure and density of saturated ammonium bromide vapour." By A. Smits and R. Purcell.

"Some complex salt studies. Part I. The preparation and properties of some selenitopentamminecobalt salts." By H. L. Riley.

"The iodometric estimation of iron." By E. C. Grey.

"The nature of hexagonal chromium." By A. J. Bradley and H. Muller.

"1 : 3-Dichlorobenzene-4 : 6-disulphonic acid and its salts." By E. B. Kidson.

"Selective solvent action. Part VII. Solubilities in mixed solvents." By N. Gregg-Wilson and R. Wright.

"Note on the formulation of dissymmetric diphenyl derivatives." By R. J. W. Le Fèvre.

"The heat of adsorption of oxygen on charcoal. Part III." By D. McKie.

"The condensation of fluorene with acetone." By P. Maitland and S. H. Tucker.

"The acylation of diazomethane : The effects of variations in the conditions on the extent of formation of chloroacetophenone from benzoyl chloride." By W. Bradley and G. Schwarzenbach.

"The ionisation of aromatic nitro-compounds in liquid ammonia. Part II." By W. E. Garner and H. F. Gillbe.

"The interaction of acids and neutral salts with stannic oxide and its relation to electrical charge." By B. N. Ghosh.

"The chemistry of the 1 : 3-dicarbonyl compounds. Part I. The mechanism of the cyanoacetamide and cyanoacetic ester condensations." By J. C. Bardhan.

"Studies in the composition of coal. The rational analysis of coal." By W. Francis and R. V. Wheeler.

"The condensation of chloral with 2 : 6-dichloroquinol." By F. D. Chattaway and F. Calvet.

"Some substitution products of azobenzene." By J. Burns, H. McCombie, and H. A. Scarborough.

"Acid and salt effects in catalysed reactions. Part XVII. The variation of the catalytic activity of an acid with its concentration and the determination of ionisation constants." By H. M. Dawson, G. V. Hall, and A. Key.

"On active nitrogen. Part V. (Amended.) The decay of the nitrogen afterglow." By E. J. B. Willey.

"The addition of halogens to unsaturated acids and esters. Part II. The addition of 'bromine chloride' to phenylpropiolic acid and the interaction between the αβ-dihalogenocinnamic acids and the halogens." By N. W. HANSON and T. C. JAMES.

"The condensation of chloral with anisic acid and with *p*-nitroanisole." By F. D. CHATTAWAY and F. CALVET.

"The condensation of pyrocatechol with dichloroacetic acid. 2 : 2′-Dihydroxydiphenoxyacetic acid." By H. A. A. AITKEN.

"The partial substitution of polyhydric alcohols. Part VII. The unreliability of structure in disubstituted glycerols." By A. FAIRBOURNE and G. W. COWDREY.

"The interaction of ethyl acetoacetate with distyryl ketones. Part IV. Selective addition to unsymmetrical chlorodistyryl ketones." By I. M. HEILBRON and R. HILL.

"The production of thiophen by the interaction of acetylene and carbon disulphide." By H. V. A. BRISCOE, J. B. PEEL, and P. L. ROBINSON.

"The reactions of hydrogen chloride with the dioxides of selenium and tellurium between 0° and 170°, with special reference to alleged addition compounds." By T. W. PARKER and P. L. ROBINSON.

"Note on paper by Hartley and Barrett on 'The determination of the density of liquids.'" By J. GRINDLEY.

"On active nitrogen. Part VI. The formation of iron nitride in the iron–nitrogen arc." By E. J. B. WILLEY.

"Determination of the pressure and density of moist saturated ammonium chloride vapour." By A. SMITS and W. DE LANGE.

"The inhibition of chemical reactions. Part II. The mechanism of the inhibition of esterification by alkaline substances. Part III. A suggestion with regard to antioxygenic action." By K. C. BAILEY.

"An *X*-ray examination of the potassium salts of the monobasic fatty acids." By S. H. PIPER.

"Adsorption of vapour on a quartz- and glass wall." By A. SMITS.

"The synthesis of four amino-3-hydroxy-1 : 4-benz*iso*oxazines. By G. NEWBERY and M. A. PHILLIPS.

"Heterocyclic compounds containing arsenic. Part II. Derivatives of 1 : 4-benz*iso*oxazine." By G. NEWBERY, M. A. PHILLIPS, and R. W. E. STICKINGS.

"Heterocyclic compounds containing arsenic. Part III. Some derivatives of 4-amino-3-hydroxyphenylarsinic acid." By I. E. BALABAN.

"Molecular structure in solution. Part IV. The densities, vis-

cosities, and electrical conductivities of aqueous solutions of cobalt chloride and hydrochloric acid at different temperatures." By O. R. HOWELL.

"The nitration of *o*-bromoacetanilide." By C. S. GIBSON and J. D. A. JOHNSON.

"The dependence of rotatory power on chemical constitution. Part XXXIII. The resolution of *dl*-*m*-carboxyphenyl ethyl sulphoxide and of *dl*-*m*-carboxyphenylethylsulphine-*p*-toluenesulphonylimine." By J. HOLLOWAY, J. KENYON, and H. PHILLIPS.

"The decay of the nitrogen after-glow." By W. C. BRAY and T. R. HOGNESS.

"The reaction between the dioxides of sodium and tellurium." By T. W. PARKER and P. L. ROBINSON.

"Researches on indoles. Part I. 5 : 6-Dimethoxy-2-methylindole." By F. LIONS.

"Some trimethoxyquinoline derivatives." By F. LIONS.

"Glucosides. Part I. The formation of glucosides from 3 : 4 : 6-triacetyl glucose-1 : 2-anhydride." By W. J. HICKINBOTTOM.

"An attempt to prepare selenium oxyfluoride by distillation of hydrogen fluoride with selenium dioxide." By J. O. MILLOTT and E. B. R. PRIDEAUX.

"The acetylation of diethylene oxide." By Miss M. MACLEOD.

"The reduction of nitro-compounds by aromatic ketols. Part II. Some *o*-, *m*-, and *p*-azoxy-compounds." By H. B. NISBET.

"The effect of the spatial position of substituent groups on acidic strength." By B. FLÜRSCHEIM.

"Nitroarylsulphuric acids and their reduction products." By G. N. BURKHARDT and H. WOOD.

"The infra-red emission spectra of flames in nitrous oxide." By C. R. BAILEY and KUN-HOU LIH.

"*ortho*-Sulphinobenzoic acid." By W. B. PRICE and S. SMILES.

"Carbon sulphidoselenide." By H. V. A. BRISCOE, J. B. PEEL, and P. L. ROBINSON.

"The chlorination of anilides. Part V. The significance of velocity measurements in relation to the problem of benzene substitution (*continued*)." By A. E. BRADFIELD and B. JONES.

"A gas circulating pump." By G. BARR.

"A study in the 2-substituted derivatives of *p*-cresol." By M. COPISAROW.

"Surface oxidation of aluminium, tungsten, and molybdenum." By L. C. BANNISTER.

"The alkaloids of some Indian aconites. Part II. Pseudaconitine." By T. M. SHARP.

"Synthetical experiments in the *iso*flavone group. Part III. A synthesis of genistein." By W. BAKER and R. ROBINSON.

"Acid and salt effects in catalysed reactions. Part XVIII. The dynamics of auto-catalysed ester hydrolysis." By H. M. DAWSON and W. LOWSON.

"Synthesis of oxydehydrocorydaline." By J. B. KOEPFLI and W. H. PERKIN.

"On the constitution of laurotetanine." By G. BARGER and R. SILBERSCHMIDT.

"Heterocyclic compounds containing arsenic. Part IV. Some urea derivatives of arylarsinic acids." By R. W. E. STICKINGS.

"Stability of ferrous sulphate solutions and their use in standardising permanganate." By J. A. N. FRIEND and E. G. K. PRITCHETT.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ADENEY, WALTER ERNEST. The principles and practice of the dilution method of sewage disposal. Cambridge 1928. pp. xii + 161. ill. 12*s*. 6*d*. net. (*Recd*. 22/6/28.)
From the Syndics of the Cambridge University Press.

AMERICAN OIL CHEMISTS' SOCIETY. Oil and Fat Industries. Vol. V, etc. New York 1928 +. (*Reference*.)
From the Bureau of Chemical Abstracts.

BAILEY, GEORGE HERBERT, and SNELLGROVE, DOUGLAS ROSEBERY. Inorganic chemistry. Vol. I. Non-metals. London 1928. pp. viii + 488. ill. 6*s*. 6*d*. net. (*Recd*. 14/9/28.)
From the Publishers: University Tutorial Press.

CAVEN, ROBERT MARTIN, and CRANSTON, JOHN ARNOLD. Symbols and formulæ in chemistry. An historical study. London 1928. pp. x + 220. ill. 15*s*. net. (*Recd*. 21/9/28.)
From the Publishers: Messrs. Blackie & Son.

CHEMICAL ENGINEERING AND MINING REVIEW. Vol. XX, etc. Melbourne 1928 +. (*Reference*.)
From the Australian Chemical Institute.

[CLARK, WILLIAM MANSFIELD, and others.] Studies on oxidation-reduction. I—X. Washington 1928. pp. vi + 363. ill. (*Recd*. 23/6/28.) From the Authors.

DEHNICKE, JOHANN. Laboratoriumsbuch für die Brennerei-Industrie. Halle (Saale) 1928. pp. xii + 292. ill. *M*. 17.80. (*Recd*. 3/10/28.) From the Publisher: Herr Wilhelm Knapp.

DUNSTAN, ALBERT ERNEST. Cantor lectures on scientific founda-

tions of the refining of petroleum. London 1928. pp. 95. ill. 3*s*. net. (*Recd*. 19/7/28.) From the Author.

FORSCHUNGSINSTITUT FÜR GESCHICHTE DER NATURWISSENSCHAFTEN IN BERLIN. Erster Jahresbericht, etc. Berlin 1928 +. (*Reference*.) From the Director.

GREEN, STANLEY JOSEPH. Industrial catalysis. London 1928. pp. xii + 507. ill. 50*s*. net. (*Recd*. 22/6/28.)
From the Publishers: Messrs. Ernest Benn.

HATSCHEK, EMIL. The viscosity of liquids. London 1928. pp. xii + 239. ill. 15*s*. net. (*Recd*. 5/10/28.)
From the Publishers: Messrs. G. Bell & Sons.

HENLE, FRANZ WILHELM. Anleitung für das organisch-chemische Praktikum. 3rd edition. Leipzig 1927. pp. xii + 308. ill. *M*. 14. (*Recd*. 20/8/28.)
From the Publishers: Akademische Verlagsgesellschaft.

HOCART, R. Problèmes et calculs de chimie générale. Paris 1928. pp. x + 181. ill. 30 *fr*. (*Recd*. 9/7/28.)
From the Publishers: MM. Gauthier-Villars & Cie.

KAISER-WILHELM-INSTITUT FÜR SILIKATFORSCHUNG IN BERLIN-DAHLEM. Veröffentlichungen. Vol. I. Berlin 1928. pp. viii + 269. (*Reference*.) ill. From the Institute.

KINGZETT, CHARLES THOMAS. Chemical encyclopædia: an epitomized digest of chemistry and its industrial applications. 4th edition. London 1928. pp. viii + 808. (*Reference*.) 35*s*. net.
From Professor J. F. Spencer.

KIRRMANN, A. La chimie d'hier et d'aujourd'hui. Paris 1928. pp. viii + 148. ill. 15 *fr*. (*Recd*. 5/10/28.)
From the Publishers: Messrs. Gauthier-Villars & Cie.

KNIBBS, NORMAN VICTOR SYDNEY. The industrial uses of bauxite: with an account of its origin, occurrence, composition and properties. London 1928. pp. 141. 21*s*. net. (*Recd*. 22/6/28.)
From the Publishers: Messrs. Ernest Benn.

KOLTHOFF, I. M., and MENZEL, H. Volumetric analysis. An authorized translation based upon the German edition by N. HOWELL FURMAN. Vol. I. New York 1928. pp. xviii + 289. ill. 15*s*. net. (*Recd*. 19/9/28.)
From the London Publishers: Messrs. Chapman & Hall.

KOSSEL, ALBRECHT. The protamines and histones. Translated from the original German manuscript by WILLIAM VEALE THORPE. London 1928. pp. xii + 107. 9*s*. net. (*Recd*. 20/9/28.)
From the Publishers: Messrs. Longmans, Green & Co.

LIEBIG, JUSTUS VON. Experimentalchemie. Vorgetragen von Prof. Dr. v. Liebig. 1848. [Facsimile reproduction of August Kekulé's notebook. Darmstadt 1928.] pp. 346. ill. (*Reference*.)
From Professor Dr. E. Berl.

LUNGE, GEORGE, and KEANE, CHARLES ALEXANDER. Technical methods of chemical analysis. 2nd edition. Edited by CHARLES ALEXANDER KEANE and PERCY CYRIL LESLEY THORNE. Vol. II. London 1928. pp. xx + 644. ill. (*Reference.*) 63*s.* net.
From the Publishers: Messrs. Gurney & Jackson.

MARTINDALE, WILLIAM HARRISON, and WESTCOTT, WILLIAM WYNN. The extra pharmacopœia. 19th edition. Vol. I. London 1928. pp. xxxvi + 1207. (*Reference.*) 27*s.* 6*d.* net.
From the Publishers: Messrs. H. K. Lewis & Co.

MENSCHUTKIN, NIKOLAI ALEXANDROVICH. Analytical chemistry. Moscow 1928. pp. 528. ill. [In Russian.] (*Recd.* 4/7/28.)
From Professor B. N. Menschutkin.

MOND NICKEL CO. The Mond Nickel Bulletin. A summary of current information on nickel. Vol. I, etc. London 1928 +. (*Reference.*)
From the Director of Research.

MORTON, RICHARD ALAN. Radiation in chemistry. London 1928. pp. xvi + 284. ill. 15*s.* net. (*Recd.* 5/7/28.)
From the Author.

RESEARCH ASSOCIATION OF BRITISH PAINT, COLOUR, AND VARNISH MANUFACTURERS. Review of current literature relating to the paint, colour, and varnish industries. No. 1, etc. Teddington 1928 +. (*Reference.*)
From the Director.

RESEARCH ASSOCIATION OF BRITISH RUBBER AND TYRE MANUFACTURERS. Library catalogue. Cambridge 1927. pp. 210. (*Reference.*)
From the Director.

REYNOLDS, WILLIAM COLEBROOK. Atomic structure as modified by oxidation and reduction. London 1928. pp. viii + 128. ill. 7*s.* 6*d.* net. (*Recd.* 16/7/28.)
From the Author.

SMITH, ERNEST ELLSWORTH. Aluminum compounds in food. New York 1928. pp. xii + 378. $7 net. (*Recd.* 7/9/28.)
From the Author.

STOTT, VERNEY. Volumetric glassware. London 1928. pp. 232. ill. 20*s.* net. (*Recd.* 29/9/28.)
From the Publishers: Messrs. H. F. & G. Witherby.

SVEDBERG, THE. Colloid chemistry. 2nd edition. Revised and enlarged in collaboration with ARNE TISELIUS. New York 1928. pp. 302. ill. $5.50 net. (*Recd.* 13/9/28.)
From the Publishers: The Chemical Catalog Company, Inc.

TABLES ANNUELLES DE CONSTANTES et données numériques de chimie, de physique, de biologie, et de technologie. Vol. VI. 1923—1924. Part ii. Paris 1928. pp. xxx, 681 to 1675. (*Reference.*)
From the Comité International.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, November 1st, 1928, at 8.0 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, on October 13th, of Edward John Wall, who was elected a Fellow on June 19th, 1919.

The following were formally admitted Fellows of the Chemical Society: Robert H. Jeffers, Wilson Baker, A. Robertson, William Bleloch, R. J. Winterton, T. R. Seshadri.

Certificates were read for the first time in favour of:

Owen Stanley Brettle, Red Hall Road, Lower Gornal, Dudley.
Albert James Butterworth, B.Sc., 44, Hind Street, E. 14.
Aaron Cohen, B.Sc., 114, Langdale Mansions, E. 1.
Arthur William Martin Dickins, 2, Rotherwick Court, Golders Green, N.W. 4.
Allan Domleo, M.Sc., Charnwood, Southfield Park, Harrow.
Constance Mary Groocock, B.Sc., 25, St. Peter's Mount, Bramley, Leeds.
Gerald Uern Hopton, B.A., 25, Museum Road, Oxford.
Joe Arthur Jessop, B.Sc., 2, Bradley Terrace, Shadwell Lane, Moortown, Leeds.
Jason Thomas William Mann, A.R.C.S., The Homestead, Burcharbro Road, Abbey Wood, S.E. 2.
Albert Edward Martin, B.Sc., 47, Mildmay Grove, N. 1.
Nellie Patterson, 23, Ferndene Road, Herne Hill, S.E. 24.
Albert Fred Tipler, B.Sc., 13B, Harley Street, Bow, E. 3.
Tekumalla Venkajee, B.A., Rajahmundry, Madras Presidency, India.
William Francis Kenrick Wynne-Jones, The University, Reading.

The following papers were read:

"Surface oxidation of aluminium, tungsten, and molybdenum." By L. C. BANNISTER.

"Synthetical experiments in the *iso*flavone group. Part III. A synthesis of genistein." By W. BAKER and R. ROBINSON.

"Anthoxanthins. Part X. A synthesis of gossypetin and of quercetagetin." By W. BAKER, R. NODZU, and R. ROBINSON.

"The electrical conductivities of some uni-univalent salts in benzonitrile. Evidence for the incomplete dissociation of strong electrolytes and the applicability of the law of mass action to their dissociation." By A. R. MARTIN.

Ordinary Scientific Meeting, Thursday, November 15th, 1928, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Douglas J. P. Berridge	June 15th, 1893.	Nov. 11th.
Albert Clarke	Dec. 2nd, 1920.	Oct. 7th.
John W. Patterson	Dec. 5th, 1912.	Oct. 3rd.
Walter Tate	Dec. 18th, 1884.	Sept. 8th.
Edmund White	Feb. 17th, 1927.	Nov. 3rd.
John Wild	May 7th, 1891.	Sept. 28th.

It was announced that

1. Professor Samuel Smiles had presented a medal struck in commemoration of Moissan and his isolation of fluorine.

2. Professor C. S. Gibson, Mr. A. J. Greenaway, Dr. J. T. Hewitt, and Professor G. T. Morgan, together with Dr. T. Slater Price (Treasurer), had been appointed by the Council to represent the Society on the Bureau of Chemical Abstracts for the year 1928—1929, and that Professor A. J. Allmand, Professor J. Kendall, and Professor F. G. Donnan would represent the Society on the Editorial Board of the *Journal of Physical Chemistry* for the year 1929, together with Dr. E. K. Rideal, appointed by the Faraday Society.

3. The Railway Companies had granted special facilities by which Fellows and others attending the Anniversary meetings in Leeds on March 21st, 1929, will be enabled to travel by rail to Leeds from any part of the country at the rate of an ordinary single fare and one-third for the double journey, provided that not less than 200 avail themselves of the cheap tickets. Tickets will be available from March 20th to 22nd. Those desiring to avail themselves of this privilege must apply to the Assistant Secretary for a voucher, which must be surrendered to the Booking Office when purchasing the ticket.

Full particulars of the arrangements for the meetings will be announced later.

4. The Council had decided that a copy of the portrait of Liebig (the gift to the Society of Mrs. Alec Tweedie) should be presented by the Council and Fellows to the German Chemical Society. Any Fellow desiring to subscribe to the cost of the copy should send his contribution to the Treasurer.

5. The Centenary of the birth of Paul Schutzenberger will be celebrated in Paris towards the end of 1929. A Fund has been formed in Paris by the Centenary Committee, and the income from this Fund will be devoted to the award of grants and prizes for

scientific industrial research. Fellows desiring to subscribe to the Fund are invited to send their contribution M. le Professeur G. Urbain, Secrétaire Général, 1, Rue Victor Cousin (Sorbonne), Paris.

The following were formally admitted Fellows of the Chemical Society :—H. C. Gull and P. L. Robinson.

Certificates were read for the first time in favour of :

Charles Mills Cawley, B.Sc., A.R.C.S., 69, Richmond Road, Gillingham.
Sydney William Challinor, B.Sc., The Rosary, Myvod Road, Wednesbury.
Frederick Hurn Constable, M.A., D.Sc., Ph.D., St. John's College, Cambridge.
Ranchhodji Dajibhai Desai, B.A., M.Sc., 21, Cromwell Road, South Kensington, S.W. 7.
Amarendra Nath Dey, M.Sc., 153, Chamberlayne Road, Kensal Rise, N.W. 10.
Edward Thomas Mervyn Garlick, M.Inst.C.E., Block Chambers, Little Malop Street, Geelong, Victoria, Australia.
Frederick Hemming, 15, Nightingale Road, Southsea.
Henry Malcolm Forrest Hughes, 37, High Street, Smethwick.
Elfed Thomas Jones, B.Sc., 149, Fillebrook Road, Leytonstone.
Abbas Mousa Mousa Mandour, 24, Hill Top Mount, Harehills, Leeds.
Leslie George Brett Parsons, B.Sc., A.R.C.S., 73, Lynton Avenue, Ealing.
Millicent Mary Theodosia Plant, B.Sc., 55, Willenhall Road, Bilston, Staffs.
Sydney Walter Slaughter, B.Sc., 90, Westcliff Park Drive, Westcliff.
Ethel Gertrude Teece, B.Sc., Grafton, Moxley Road, Darlaston, Staffs.
Harry Augustus Thomas, B.Sc., 42, Cole Valley Road, Hall Green, Birmingham.
Clarence Sydney Woolvin, B.Sc., 35, Wyley Road, Radford, Coventry.
Winifred Mary Wright, M.A., Ph.D., Shaftesbury House, Shaftesbury Road, Cambridge.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) :

Shankar Lal Jindal, Prof., M.Sc., 101/118, Talag Mahal, Cawnpore.
Benjamin Stuart Paschall, M.D., 1014, American Bank Building, Seattle, Washington, U.S.A.
Taizo Yamashita, Prof., Asamacho 4, Mukden, China.

The following papers were read :

"The densities of butyric acid–water mixtures." By J. Grindley and C. R. Bury.

"Studies of valency. Part XII. Isomeric derivatives of diethyl telluride." By F. L. Gilbert and T. M. Lowry.

"Studies of valency. Part XIII. Further experiments on the molecular structure and configuration of the quadrivalent derivatives of tellurium." By T. M. Lowry and F. L. Gilbert.

"The effect of intensive drying on certain physical properties of benzene." By H. V. A. Briscoe, J. B. Peel, and P. L. Robinson.

"The passivity of metals. Part II. The breakdown of the protective film and the origin of corrosion currents." By U. R. Evans.

List of Papers, or Abstracts thereof, received between October 18th and November 15th, 1928. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"The structure of the normal monosaccharides. Part V. Lyxose." By E. L. HIRST and J. A. B. SMITH.

"Heterocyclic compounds of arsenic. Part V. Benziminazole arsinic acids." By M. A. PHILLIPS.

"The Budde effect in bromine." By E. MATTHEWS.

"Studies in the composition of coal. The active decomposition-point of coal." By R. HOLROYD and R. V. WHEELER.

"Note on the rate of photochemical combination of chlorine and hydrogen in glass capillary tubes." By D. L. CHAPMAN and P. P. GRIGG.

"Derivatives of diphenyl-2-carboxylic acid." By F. BELL.

"Crystallography of the aliphatic dicarboxylic acids." By W. A. CASPARI.

"Influence of poles and polar linkings on the course pursued by elimination reactions. Part II. Mechanism of exhaustive methylation" (*continued*). By C. K. INGOLD and C. C. N. VASS.

"Influence of poles and polar linkings on the course pursued by elimination reactions. Part III. A decomposition of dialkyl-sulphones." By G. W. FENTON and C. K. INGOLD.

"An attempt to prepare *iso*indole." By G. W. FENTON and C. K. INGOLD.

"Hydroxy-derivatives of thioxanthone dioxide." By W. B. PRICE and S. SMILES.

"The infra-red emission spectra of burning sulphur compounds." By C. R. BAILEY and KUN-HOU LIH.

"The oxidation of dipinene." By L. H. BRIGGS and W. F. SHORT.

"Experiments on the degradation of quaternary ammonium salts." By T. S. STEVENS, E. M. CREIGHTON, and A. B. GORDON.

"The migration of radicals in quaternary ammonium salts. Part I." By T. S. STEVENS and M. MACNICOL.

"Researches in the menthone series. Part VI. The crystallisation of menthylamines with optically active acids." By J. READ, C. C. STEELE, and P. G. CARTER.

"Esters of phosphoric acid. Part I. Cetyl and cholesteryl phosphates." By R. H. A. PLIMMER and W. J. N. BURCH.

"Esters of phosphoric acid. Part II. The action of ethyl meta-

phosphate on alcohols." By R. H. A. PLIMMER and W. J. N. BURCH.

"Esters of phosphoric acid. Part III. The action of ethyl metaphosphate on ammonia and some amino-compounds." By R. H. A. PLIMMER and W. J. N. BURCH.

"Esters of phosphoric acid. Part IV. Hydrolysis by acid and alkali." By R. H. A. PLIMMER and W. J. N. BURCH.

"Esters of phosphoric acid. Part V. Phosphoric esters of chlorethyl alcohol and glycol." By R. H. A. PLIMMER and W. J. N. BURCH.

"Replacement of halogen in *ortho*-bromobenzoic acid." By W. R. H. HURTLEY.

"The solubility of sodium ferrocyanide in water between 0° and 100°." By J. A. N. FRIEND and J. E. TOWNLEY.

"The interaction of piperidine with nitro- and halogeno-nitro-derivatives of xanthone and diphenylene oxide." By R. J. W. LE FÈVRE.

"On the electrical behaviour of surfaces of corroding iron." By A. L. MCAULAY and S. H. BASTOW.

"Stereoisomerism of disulphides and related substances. Part III. Some pairs of aromatic disulphoxides." By E. V. BELL and G. M. BENNETT.

"The thermal decomposition of ammonia with reference particularly to the Baly–Duncan effect." By W. A. STRINGFELLOW.

"Researches on residual affinity and co-ordination. Part XXXI. Molybdyl bis-β-diketones." By G. T. MORGAN and R. A. S. CASTELL.

"The mechanism of corrosion." By U. R. EVANS.

"Carbocyanine dyes with substituents attached to the three-carbon chain." By F. M. HAMER.

"The condensation of dichloroacetaldehyde with phenols." By F. D. CHATTAWAY and A. A. MORRIS.

"Colloidal platinum. Part V. The coagulation by electrolytes in acid solution." By S. W. PENNYCUICK.

"Colloidal platinum. Part VI. The nature of the surface of colloidal platinum particles, and the action of bases thereat." By S. W. PENNYCUICK.

"Colloidal platinum. Part VII. The coagulation by electrolytes in basic solution." By S. W. PENNYCUICK.

"Studies in ketol-lactol tautomerism. Part I. Ring-chain tautomerism in α-carboxy-ββ-dimethyl-γ-acetylbutyric acid and a synthesis of ββ-dimethyl-γ-acetylbutyric acid." By M. QUDRAT-I-KUDA.

"The action of aromatic acid chlorides on vinyldiacetoneamine." By J. GRAYMORE.

"The rotation dispersion and circular dichroism of caryophyllene nitrosite." By S. MITCHELL.

"Anthoxanthins. Part VIII. A synthesis of morin and of 5 : 7 : 2′ : 4′-tetrahydroxyflavone." By R. ROBINSON and K. VENKATARAMAN.

"Anthoxanthins. Part IX. Syringetin." By T. HEAP and R. ROBINSON.

"Properties of conjugated compounds. Part VI. The dibromination products of cyclic butadienes." By E. H. FARMER and W. D. SCOTT.

"The catalytic hydrogenation of different types of unsaturated compounds. Part IV. The hydrogenation of conjugated systems. Piperinic acid." By S. V. LEBEDEV and A. O. YAKUBCHIK.

"Synthetical experiments in the chromone group. Part I. A new synthesis of 7 : 8-dihydroxy-2-methylchromone and 7 : 8-dihydroxyflavone." By K. VENKATARAMAN.

"The action of acids upon diazoaminobenzene." By J. C. EARL.

"Aminobenzthiazoles. Part XI. The effect of substituents on the Hugershoff transformation in derivatives of thiocarbanilide." By G. M. DYSON, R. F. HUNTER, and C. SOYKA.

"Observations on the chlorination products of ββ′-dichlorodiethyl sulphide. Part II." By J. W. C. PHILLIPS, J. S. H. DAVIES, and S. A. MUMFORD.

"Reduction products of the hydroxyanthraquinones. Part VIII." By R. W. HARDACRE and A. G. PERKIN.

"Interactions of selenium oxychloride and phenols." By G. T. MORGAN and F. H. BURSTALL.

FORMS OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, DECEMBER 6th, 1928.

AINLEY, ARTHUR DONALD, Highfield House, Dobcross, nr. Oldham. English. Research Student. B.Sc. (1st Class Hons.), Manchester. (*Signed by*) Arthur Lapworth, Frederick Challenger, L. Klein, Arnold T. Peters, Alice C. Kellett.

ALCOCK, NELSON, c/o Messrs. C. C. Wakefield & Co., Ltd., Yorkshire House, Spring St., Sydney, Australia. British. Analytical Chemist. Four years as articled pupil to Mr. F. Higson, Manchester. Four years as Chief Chemist to Messrs. Huxley & Co., Oil Merchants, Liverpool. Nine years as Works Chemist to Messrs. C. C. Wakefield & Co., Ltd., Wakefield House, 30/32

Cheapside, London, E.C. 2., at their Liverpool works. (*Signed by*) Grove Johnson, E. A. Evans, Harold Moore.

ALIMCHANDANI, RUPCHAND LILARAM, Karnatak College, Dharwar, India. Indian. Lecturer of Chemistry. M.Sc. (Bombay). (1) Ten years' experience of teaching Chemistry in Colleges. (2) Joint or independent author of the following papers: (i) "Derivatives of Gallic Acid," etc., Parts I and II (*J.C.S.*, 1920, **117**; 1921, **119**); (ii) "Properties of Neighbouring Hydroxy-groups attached to a Benzene Nucleus" (*J.C.S.*, 1924, **125**, 539); (iii) "The Reduction of the Group $-CH(OH)\cdot CCl_3$" (*J. Ind. C.S.*, 1925, II, 1). (*Signed by*) A. N. Meldrum, A. R. Normand, M. Prasad.

AMSTELL, SIMON, 3, Ely Terrace, Mile End Rd., E. 1. British. Research Student at East London College. (*Signed by*) J. R. Partington, D. C. Jones, W. H. Patterson.

ANGUS, WILLIAM ROGIE, 11, Chattan Place, Aberdeen, Scotland. British. Research Student in Chemistry, University College, London. M.A., B.Sc. (Aberdeen), A.I.C. One year's research at Aberdeen University on "The Stability of Racemates." (*Signed by*) Alex Findlay, F. G. Donnan, T. Harold Reade, R. B. Strathdee.

BRETTLE, OWEN STANLEY, Red Hall Road, Lower Gornal, nr. Dudley. British. Assistant Gas Engineer and Manager. Nine years' practical experience in the chemical and technical control of chemical and gasworks plant. Five years' Assistant Engineer and Manager of Sedgley Gas Department, with extensive experience in chemical and technical matters relative thereto. Three years' experience in the constructional side of chemical plant. Holder of numerous certificates (Ordinary and Advanced Grades) of theoretical and practical inorganic chemistry, gas engineering, electrical engineering, and building science. Teacher of building science under Wolverhampton Technical College. (*Signed by*) Joseph Poulson, T. H. Poulson, Ernest Hardiker.

BROOKS, WILLIAM, 473, Halliwell Road, Bolton, Lancs. English. Manufacturing Chemist. Thirty years' experience as a Manufacturing Chemist. One of the two founders in 1906 of the firm of Marsh, Brooks & Co., Bolton, specialists for the supply of pharmaceutical preparations for the medical profession. (*Signed by*) Harcourt Phillips, Jno. L. Whiteside, Thos. Aspinall.

BUTTERWORTH, ALBERT JAMES, 44, Hind Street, E. 14. English. B.Sc. (London). Student at East London College since Sept. 1926. (*Signed by*) J. R. Partington, W. H. Patterson, D. C. Jones, F. E. King.

CAMPBELL, DUNCAN ARTHUR, Roseleigh, Speldhurst, Tunbridge Wells, Kent. British. Lecturer of Chemistry. M.Sc.Tech. Manchester, B.Sc. London. Blackpool Technical School, 1922–26. Lincoln Technical College, 1926–present. Associate of Institute of Chemistry. (*Signed by*) J. B. Firth, B. D. Shaw, E. B. R. Prideaux, F. S. Kipping.

CHARD, CHARLES ERNEST, 52, Eleanor Rd., Stratford, E. 15. English. Teacher (Science Master). B.Sc. London (1st Class). Teachers' Diploma (Cambridge). Science Master, Plaistow Secondary School, 1928. Student at Southampton University College, 1924–27. (*Signed by*) D. R. Boyd, D. V. N. Hardy, H. H. Hatt.

COCKBURN, JOSEPH GEORGE, 34, Cambridge Terrace, Gateshead-on-Tyne. English. Post-graduate Research Student. B.Sc. Durham (1st Class Hons.). (*Signed by*) G. R. Clemo, Richard Raper, R. D. Haworth, H. V. A. Briscoe.

COHEN, AARON, 114, Langdale Mansions, E. 1. British. Research Student. B.Sc. Hons. Chemistry (1st Class), London University. Professor's

Research Assistant, Chemistry Research Dept., King's College, London. (*Signed by*) Samuel Smiles, A. J. Allmand, K. C. Roberts.

CRUMMACK, GEORGE CECIL, 130, Ash Road, Headingley, Leeds. British. Pharmaceutical Chemist on staff of United Drug Co., Ltd. Major examination Pharm. Soc., Great Britain. Student of the late Professor Arthur W. Crossley, F.R.S., 1908–9. Examination of Faeces and Urine for Arsenic after 606 Treatment in 1915–16. Report sent to A.D.M.S., Portsmouth. (Brought to notice for valuable services rendered during war.) I am desirous of receiving the publications of the Society. (*Signed by*) F. Pilkington Sargeant, Wm. Forster, Frank Browne.

DICKINS, ARTHUR WILLIAM MARTIN, 2, Rotherwick Court, Rotherwick Road, Golder's Green, N.W. 4. British. Chemical Manufacturer. Diploma Finsbury Technical College. Researches in the manufacture of British Photographic Reagents as Metol Amidol Glycin, etc. (*Signed by*) O. Silberrad, T. Slater Price, F. F. Renwick, S. O. Rawling.

DIXON, WILLIAM LESLIE, 14, Melrose Road, Merton Park, S.W. 19. British. Assistant editor *The Chemist and Druggist*. Qualifying examination of the Pharmaceutical Society. Experience in laboratories of manufacturing chemists. (*Signed by*) George P. Forrester, Arthur E. Pitt, Sydney A. Mann.

DOMLEO, ALLAN, "Charnwood," Southfield Park, Harrow, Middlesex. British. Technical Assistant. M.Sc. (London). B.Sc. (London), Hons. in Chemistry, 1920. Engaged in research in Organic Chemistry at Battersea Polytechnic, 1920–24. Examiner in H.M. Patent Office (Organic Chemistry), 1920–28. With Joseph Kenyon, *J.C.S.*, 1926, 1841. (*Signed by*) J. Kenyon, A. Houssa, S. Greenberg, Henry Phillips, F. Bell.

GODBOLE, SHANKAR NAGNATH, Nagpur (India), College of Science, Nagpur, C.P. Indian. Professor of Chemistry. B.Sc. (Bombay), M.Sc. (Allahabad). Assistant Professor of Chemistry, 1913–24. Professor of Chemistry, 1924–onwards. Also Chemical Examiner of Explosives to C.P. Govt. from 1927. (*Signed by*) D. V. Bal, A. R. P. Aiyer, R. N. Kayasth.

GORDON, JOHN GRANT, 23, Jenner House, Hunter Street, W.C. 1. British. Chemist and Technical Director, Pioneer Chemical Works, Stratford, E. Wish to receive the Society's publications, to use the Library, and to attend the meetings of the Society. (*Signed by*) G. F. Merson, Thos. Tucker, J. F. Tocher.

GROCOCK, CONSTANCE MARY, 25, St. Peter's Mount, Bramley, Leeds. British. Research Student. B.Sc. 1st Class Hons. Chemistry, Leeds. Research Student in Organic Chemistry at Leeds University. (*Signed by*) C. K. Ingold, J. W. Baker, H. Burton.

HEAD, FRANK SAMUEL HENRY, 149, Fillebrook Rd., Leytonstone, E. 11. English. Research Student, East London College. B.Sc. London, 1st Class Hons. in Chemistry. (*Signed by*) J. R. Partington, A. Robertson, F. E. King.

HENLEY, ROSALIND VENETIA, 9, Oxford Square, W. 2. English. Student of Chemistry at Bedford College. I wish to keep abreast of the advance of chemistry by attending the meetings and receiving the Journal. A joint paper has been presented to the Chemical Society for publication. (*Signed by*) James F. Spencer, E. E. Turner, Florence R. Shaw.

HOPTON, GERALD UERN, 25, Museum Road, Oxford. English. Research Student. B.A. Oxon. Passed Part I (Hons.) in Chemistry at Oxford. Scholar of New College, Oxford. (*Signed by*) W. H. Perkin, J. Masson Gulland, S. G. P. Plant, E. Hope.

HURTLEY, WILLIAM ROBERT HARDY, 28, Chestnut Road, W. Norwood,

S.E. 27. British. Demonstrator in Chemistry, King's College, London. B.Sc., Ph.D., King's College, University of London. (Joint author) *J.C.S.*, 1926, 1821, 2263; 1927, 534. (*Signed by*) Samuel Smiles, A. J. Allmand, W. H. Hurtley.

JACKSON, RALPH ANDERSON, 46, St. James's Road, Carlisle. English. Works Chemist to Messrs. Hudson Scott & Sons, Ltd., Colour Printers, Carlisle. Scholar of Peterhouse, Cambridge. Natural Sciences Tripos, Part I, Class II; Part II (chemistry), Class II. (*Signed by*) George H. Martin, Hamilton McCombie, Harold A. Scarborough.

JESSOP, JOE ARTHUR, 2, Bradley Terrace, Shadwell Lane, Moortown, Leeds, Yorks. British. Research Student in Organic Chemistry. B.Sc. 1st Class Hons. Chemistry, Leeds. (*Signed by*) C. K. Ingold, J. W. Baker, E. Rothstein.

KAMIL, ZÉNAB, Bedford College, Regent's Park, N.W. 1. Egyptian. Student. Honours Student of Chemistry at Bedford College. (*Signed by*) James F. Spencer, Ivy W. Rogers, Mollie Barr.

KRISHNASWAMI, KOLAR RAMAKRISHNAIYER, 21, Cromwell Road, S. Kensington, S.W. 7. Hindu. Research Student, University College, London. B.A., Mysore University (India). Associate of the Indian Institute of Science, Bangalore, India. Assistant Chemist, Indian Institute of Science, Bangalore, India. "The Atomic Weight of Antimony from Different Sources," *J.C.S.*, 1927, 2534. (*Signed by*) J. L. Simonsen, C. S. Gibson, W. M. Colles.

LEONARD, JULIAN MAYNARD, Firfield, 1, Lindfield Gardens, Hampstead, N.W. 3. British. Chemical Manufacturer. Partner in Carless, Capel & Leonard. Desires to receive the publications of the Society and to use the Library. (*Signed by*) Francis H. Carr, Thos. Macara, L. E. Campbell, Francis H. Banfield.

LEVI, ALFRED AARON, 2, Ormonde Terrace, Regent's Park, N.W. 8. British. M.Sc. (New Zealand University). Research Student. (*Signed by*) Samuel Smiles, W. B. Price, K. C. Roberts.

MALLEN, CATHERINE ELEANOR, The Red House, Beechwood Terrace, Sunderland. British. Lecturer. M.A., Cantab. Lecturer in Chemistry at Armstrong College, Newcastle-on-Tyne. (*Signed by*) R. D. Haworth, G. C. Leitch, H. V. A. Briscoe.

MANN, JASON THOMAS WILLIAM, The Homestead, Burcharbro Rd., Abbey Wood, S.E. 2. British. I am working under Professor J. F. Thorpe in the research laboratories of the Imperial College. A.R.C.S. (2nd Class Hons.), also 2nd Class Special B.Sc. will be awarded me after a further year at College. I am at present working for a Ph.D. degree. (*Signed by*) Jocelyn Thorpe, M. A. Whiteley, R. P. Linstead, R. F. Hunter.

MARGINSON, CHARLES CARR, The Homestead, Whitestakes, near Preston. English. Company Director. B.Sc. (Hons. Chemistry, Manchester). Inter. B.Sc. (London). In order to keep abreast of modern chemistry. (*Signed by*) Arthur Lapworth, R. Robinson, Frederick Challenger, D. H. Bangham.

MARTIN, ALBERT EDWARD, 47, Mildmay Grove, N. 1. British. Research Student. B.Sc. (Lond.), 2nd Class Hons. Chemistry. (*Signed by*) J. R. Partington, W. H. Patterson, D. C. Jones.

MENON, KOTTIAZATH NARAYANA, 55, Parliament Hill, Hampstead, N.W. 3. British Indian. Research Chemist under Prof. Robinson. M.Sc. (Bombay). *J.C.S.*, 1926, 2247; 1928, 431 (part author with Prof. J. L. Simonsen). (*Signed by*) Robert Robinson, J. L. Simonsen, W. M. Colles.

MURRAY, MARTHA ELIZABETH, 90, Channel Street, Galashiels, Selkirkshire.

British. Analytical Chemist. B.Sc. (2nd Class Hons., Lond.), A.R.C.Sc.I., A.I.C. Research Chemist and Lecturer in Chemistry at the Scottish Woollen Technical College, Galashiels, 1924–28. (*Signed by*) A. G. G. Leonard, W. E. Adeney, A. O'Farrelly.

OXFORD, ALBERT EDWARD, 7, Talbotville Rd., Broad Green, Liverpool. English. Research Chemist at War Office Research Establishment, Sutton Oak, Lancs. M.Sc., Ph.D. (Manchester). *J.C.S.*, 1926, 2004; 1927, 1964, 2239; (with Professor Robinson), *J.C.S.*, 1926, 383, 401; (with Professors Perkin and Robinson), *J.C.S.*, 1927, 2389; (with Professor Raper), *J.C.S.*, 1927, 417. (*Signed by*) Robert Robinson, James D. Fulton, Alex Robertson, Reginald C. Fawcett.

PATTERSON, NELLIE, 23, Ferndene Rd., Herne Hill, S.E. 24. British. Pharmaceutical Chemist. Major Diploma of the Pharmaceutical Society of Great Britain. Pharmacist, Tropical Diseases Hospital, Endsleigh Gardens, W.C. 1. I wish to attend the lectures and receive the publications of the Chemical Society. (*Signed by*) Francis H. Carr, Charles Alex. Hill, J. Langford Moore.

POSTELL, RONALD, 130, St. John's Avenue, Bridlington, Yorks. British. Schoolmaster. B.A. (Hons. in Chemistry, Physics, and Geology), Cambridge. Late Exhibitioner in Natural Sciences, Trinity College, Cambridge. Honours course in chemistry, Cambridge University, 1925–28. Chemistry Master, Aldenham School, June 1928 to date. (*Signed by*) W. J. Pope, W. H. Mills, F. B. Kipping.

RUSSELL, ALFRED, Department of Chemistry, The Queen's University, Belfast, N.I. British. Assistant, Dept. of Chemistry, Queen's University, Belfast. B.Sc. (1st Class), Belfast. (*Signed by*) A. W. Stewart, J. K. Marsh, H. Graham.

SAINT, SIDNEY JOHN, Government Laboratory, Barbados, B.W.I. British. Agricultural Chemist. B.Sc. (London), A.I.C. Formerly Lecturer in Agricultural Chemistry, Leeds University (1922–26). (With N. M. Comber), *Soil Science*, 1924, xviii, 131; *Trans. Faraday Soc.*, 1925, xx; *Proc. Second Comm. Inter. Soc. Soil Sci.*, 1926, Vol. A. (*Signed by*) H. Bassett, H. A. D. Neville, J. W. Dodgson.

SAUNDERS, RUPERT HENRY, "Littlecot," Windsor Rd., Slough, Buckinghamshire. British. Assistant Engineer and Manager, Slough Gas and Coke Co. Chief Chemist to Worthing Gas Co. Control of laboratories for analytical work and research, with special reference to effluents, tars, and ammonium sulphate. Subsequently as Assistant Engineer and Manager to the Worthing Gas Co., and now as Assistant Engineer and Manager to the Slough Gas Co., responsible for the efficiency of and the results obtained from the various manufacturing and by-products plant at their respective works. (*Signed by*) F. Napier Sutton, M. C. Clutterbuck, H. Houlston Morgan.

SELIKMAN, HARRY, 46, Harpur Avenue, Benoni, Transvaal. British. Research Student. B.Sc., Witwatersrand University, Johannesburg. Desire to keep in touch with the advance and development of chemical science. (*Signed by*) Henry Stephen, O. G. Backeberg, J. A. Wilkinson.

SHETH, KANTILAL MAGANLAL, Assistant Manager, Shree Shakti Alkali Works, Dhrangadhra, Kathiawad, India. Hindoo. State Chemist. M.Sc. (Bombay), A.I.I.Sc. (Bangalore). 1. One of the authors of the "Extraction of Caffeine," *J. Ind. Inst. Sci.*, Vol. V, Part XIII. 2. Analytical and Works Chemist in a Hydrogenation Factory, Bombay. 3. Enormous amount of experimental work carried out in connection with the manufacture of salt and by-products (soda, magnesium chloride, magnesium sulphate, etc.), *vide*

book on Salt by Kapilram H. Vakil, M.Sc., B.A., F.I.C. 4. Lecturer in Sir Ajitsinhji High School, with brilliant record for the High School in Bombay University. 5. State Chemist and Assistant Manager. (*Signed by*) K. G. Naik, M. Prasad, A. R. Normand.

SIMPSON, HENRY GEORGE, 21, Truro Road, Wood Green, N. 22. British. Research student at East London College. London University B.Sc. (General), 1st Class Hons. in Physics, Pure Mathematics, and Chemistry. London University B.Sc. (Special), 1st Class Hons. in Chemistry. (*Signed by*) J. R. Partington, W. H. Patterson, F. E. King.

SMITH, JOHN WILLIAM, 70, Verdant Lane, S.E. 6. British. Research Student. B.Sc. London (1st Class Hons. Chemistry), University College, London. Three years' experience as research student in Department of Chemistry, University College, London. Thesis for Ph.D. degree submitted to University of London. "The Vapour Pressure of Intensively Dried Nitrogen Tetroxide," *J.C.S.*, 1927, 867; "The Effect of Intensive Drying on the System Nitrogen Peroxide–Nitric Oxide–Oxygen," sent for publication; "The Adsorption of Vapours on an Amalgamated Platinum Surface," sent for publication. (*Signed by*) F. G. Donnan, L. F. Gilbert, H. Terrey.

SOLOMON, WILLIAM, 14, Finsen Rd., S.E. 5. British. Chemist. Special B.Sc. (Lond.) (1st Class Hons. Chemistry). Student at Birkbeck College (University of London). I desire to receive the current literature on pure chemistry. (*Signed by*) George W. Ferguson, Samuel Sugden, George Senter, F. J. Thorneycroft.

SUMNER, CYRIL GORDON, "Willow Dene," 53, St. Thomas' Road, Chorley, Lancs. British. Research Student, Victoria University of Manchester. B.Sc., 1st Class Hons. in Chemistry, 1925; M.Sc., 1926 (Victoria University of Manchester). Three years' research experience (under direction of D. C. Henry). Work so far unpublished. Subject: A New Method for the Study of Cataphoresis. Awards: Graduate Prize and Leblanc Medal in Applied Electrochemistry, 1925. Beyer Fellowship, 1927–28 (Victoria University of Manchester). Senior Research Award, 1928–31 (Dept. of Scientific and Industrial Research). (*Signed by*) Arthur Lapworth, D. C. Henry, Fred Fairbrother.

THAKUR, RAMSIMHA, Mandla Fort, Mandla, C.P., India. Indian. Research Scholar in Organic Chemistry at Royal College of Science. B.Sc. (Nagpur), M.Sc. (Nagpur), first in University. (*Signed by*) G. A. R. Kon, I. Vogel, W. E. Hugh.

TIPLER, ALBERT FRED, 13B, Harley Street, Bow, E. 3. English. Research Student B.Sc. (Special), London, 1st Class Hons. Student at East London College since Sept. 1926. (*Signed by*) J. R. Partington, W. H. Patterson, F. E. King, A. Robertson.

VAUGHAN, ARTHUR ERNEST, jun., Quebec Lodge, Regent Road, Birkdale, near Southport. British. Brewer and Analytical Chemist. Certificate of Brewing and Malting, University of Birmingham; and desirous of receiving the Society's journal. (*Signed by*) Herbert Hobson, G. D. Clarkson, C. E. Sutcliffe.

VENKAJEE, TEKUMALLA, Rajahmundry, Madras Presidency, India (present address, c/o The Laboratories, The Valleyfield Paper Mills, Penicuik, Midlothian). Indian. Chemist, The Carnatic Paper Mills, Ltd., Rajahmundry, India. B.A., Madras University, with Chemistry as the special subject. Honorary Research Student in the laboratories of the Maharaja's College, Vizianagram, India. Special student of Mr. William Raitt, F.C.S., M.I.Chem.E., in cellulose chemistry and paper technology. Trained in civil,

mechanical, and chemical engineering in the C.P. Mills under the American chemical engineer, Mr. E. P. Wood. Articles on "Sabai" grass and "Bamboo" in the Paper Trade Journal, New York. Manufacture of "Cotton Seed Oil and Paper from Cotton Stalks" in Andhrapatrika Annual, 1919. (*Signed by*) William Raitt, Madyar Gopel Rao, Navin Chandra Mittal.

WEBSTER, GEORGE REGINALD, 8, Marlborough Road, Bearwood, Birmingham. British. Assistant Works Manager (Branch Works). 1925, investigator and author of prize thesis, "Aluminium Soldering, Welding, and Fluxes," Birmingham Metallurgical Soc., also paper "Useful Alloys of Aluminium, and their Properties," *J. Inst. Brit. Foundrymen*, Nov. 4th, 1926. Position, Assistant Works Manager, Metallurgical Chemist, and Engineer. I desire also to attend the meetings, etc., and to keep in touch with current research. (*Signed by*) Ernest Hardiker, Joseph Lones, Arthur Adams.

WHITE, MARGARET KATHERINE, Northern Polytechnic, N. 7. English. Librarian, Northern Polytechnic, N. 7. B.Sc., 2nd Class Hons. Chemistry (London), M.Sc. Lond. Co-author with Dr. T. J. Drakeley, F.C.S., of three papers published in the *Journal of Agricultural Science*, Vol. 17, Pt. I, p. 118; Pt. III, p. 140; Vol. 18, Pt. III, p. 496; all dealing with the influence of breed, age, and period of lactation of the cow, on the yield and quality of the milk. (*Signed by*) T. J. Drakeley, D. H. Richardson, H. J. S. King.

WILLIAMS, WILLIAM DUDLEY, Cia Industrial y Comercial de Petroleo, Canadon Rosales, Comodoro Rivadavia, Argentina. British. Chemist. B.Sc. (Lond.), 1st Class Hons. Chemistry, F.I.C. Part-time Lecturer in Chemistry, Swansea Technical College, 1922–24. Chemist with Anglo-Persian Oil Co., Ltd., 1923 onwards. Part author of paper "Action of Chlorides of Phosphorus on Chlorodimethyldihydroresorcinol," *J.C.S.*, 1922, 121. (*Signed by*) J. E. Coates, L. E. Hinkel, E. E. Ayling, D. H. Hey.

WYNNE-JONES, WILLIAM FRANCIS KENRICK, The University, Reading. British. Lecturer in Chemistry. *J.C.S.*, 1924, 1031; 1928, 1230. (*Signed by*) D. Roy Maxted, J. W. Dodgson, H. Bassett.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

JINDAL, SHANKAR LAL, 101–118, Talag Mahal, Cawnpore, U.P., India. Indian. Professor of Chemistry. M.Sc. Allahabad University. Contributed articles to the *Chemical News* and *Nature*, and the author of *A Text-book of Inorganic Chemistry* for the Intermediate Classes and five years' teaching experience. (*Signed by*) N. R. Dhar, K. P. Chatterjee.

LIPWORTH, ALEXANDER, 23, Kerk Street, Johannesburg, South Africa (postal address, P.O. Box 5084, Johannesburg). British. Chemist and Druggist, Transvaal, South Africa. Interested in chemical research, being Managing Director of a wholesale firm of Manufacturing Chemists. (*Signed by*) Edward A. Andrews.

MAR, PETER, 296, Ellen Street, Winnipeg, Manitoba, Canada. Born Victoria, B.C., Canada. Instructor in Physics (Lingnaam University, Canton, China). B.Sc. (University of Manitoba (1922), M.A. (Oakaloosa College), M.Sc. (University of Manitoba (1924). Instructor in Sciences (Union Middle School, Canton, China) (1923–26). Fellowship China Medical Board of the Rockefeller Foundation (1925–26) at Pekin. (*Signed by*) Matthew A. Parker.

SAW, WALTER WILLIAM, c/o Vacuum Oil Co., Pty., Ltd., Perth, Western Australia. Australian. Analytical Chemist. B.Sc. (Western Australia). Associate of the Australian Chemical Institute. Five years' as Chemist with

Government Chemical Laboratory. One year as Chemist with Vacuum Oil Co., Pty., Ltd. (*Signed by*) N. T. M. Wilsmore, Edward S. Simpson.

YAMASHITA, TAIZO, Asamacho 4, Mukden (Japanese Concession), China. Japanese. Professor of S. M. Medical College. Doctor (Imperial University of Tokyo). (*Signed by*) Yasuhiko Asahina.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ERNST, FRANK A. Fixation of atmospheric nitrogen. New York 1928. pp. x + 154. ill. 12*s.* 6*d.* net. (*Recd.* 19/10/28.)
From the London Publishers: Messrs. Chapman & Hall.

HAAS, PAUL, and HILL, THOMAS GEORGE. An introduction to the chemistry of plant products. 4th edition. Vol. I. London 1928. pp. xvi + 530. ill. 18*s.* net. (*Recd.* 17/10/28.)
From Dr. P. Haas.

HUXHAM, JOHN. Medical and chemical observations upon antimony. London 1756. pp. 78. (*Reference.*)
From Dr. Alexander Scott.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY. Abstracts of scientific and technical publications, including abstracts of Doctors' theses. No. 1 etc., Cambridge, Mass. 1928+. (*Reference.*)
From the Director.

MOUREU, CHARLES. Notions fundamentales de chimie organique. 9th edition. Paris 1928. pp. x + 657. 70 *fr.* (*Recd.* 8/11/28.)
From the Publishers: MM. Gauthier-Villars & Cie.

PAGE, JOHN. Receipts for preparing and compounding the principal medicines made use of by the late Mr. Ward. London 1763. pp. 33. (*Reference.*) From Dr. Alexander Scott.

REINTHALER, FRANZ. Artificial silk. Enlarged and revised edition. Translated from the German by FREDERICK MAURICE ROWE. London 1928. pp. xii + 276. ill. 21*s.* net. (*Recd.* 30/10/28.) From the Publishers: Messrs. Chapman & Hall.

SCHOEN, MARCEL. The problem of fermentation: the facts and the hypotheses. Translated from the French by HERBERT LLOYD HIND, and revised and enlarged by the author. London 1928. pp. xii + 211. 21*s.* net. (*Recd.* 14/11/28.)
From the Publishers: Messrs. Chapman & Hall.

STEVENS, HENRY POTTER. Latex. London 1928. pp. 66. ill. (*Recd.* 25/10/28.) From the Author.

UNITED STATES. *Department of Commerce.* Bureau of Mines. Experimental studies on the effect of ethyl gasoline and its combustion products. Report to the GENERAL MOTORS RESEARCH

CORPORATION and the ETHYL GASOLINE CORPORATION. Washington 1927. pp. xx + 447. ill. (*Recd.* 20/8/28.)
From the United States Bureau of Mines.

II. *By Purchase.*

ALSBERG, CARL LUCAS, and TAYLOR, ALONZO ENGLEBERT. The fats and oils: a general view. California 1928. pp. viii + 103. 7*s.* 6*d.* net. (*Recd.* 31/7/28.)

BERL, ERNST, and RANIS, L. Die Anwendung der Interferometrie in Wissenschaft und Technik. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XIX.) Berlin 1928.

BRAGG, SIR WILLIAM. An introduction to crystal analysis. London 1928. pp. viii + 168. ill. 12*s.* net. (*Recd.* 23/10/28.)

BUCHANAN, R. E., and FULMER, ELLIS I. Physiology and biochemistry of bacteria. Vol. I. [Philadelphia] 1928. pp. xii + 516. ill. 34*s.* net. (*Recd.* 24/7/28.)

CREIGHTON, HENRY JERMAIN. Principles and applications of electrochemistry. 2nd edition. Vol. I. Principles. New York 1928. pp. xvi + 488. ill. 20*s.* net. (*Recd.* 18/10/28.)

DOW, D. B. Oil-field emulsions. (U.S. Bureau of Mines, Bulletin 250.) Washington 1926. pp. vi + 112. ill. 1*s.* 8*d.* net. (*Recd.* 7/7/28.)

EULER, WOLF ADOLF. Die Gichtgas-Reinigung. Die wichtigsten Verfahren unter besonderer Berücksichtigung des Trockengasreinigungs-Verfahrens System Halbergerhütte-Beth sowie des Theisen-Desintegrator-Verfahrens. Berlin 1927. pp. vii + 132. ill. *M.* 16.50. (*Recd.* 19/7/28.)

EVANS, CHARLES [ARTHUR] LOVATT. Recent advances in physiology. 3rd edition. London 1928. pp. xiv + 403. ill. 12*s.* 6*d.* net. (*Recd.* 18/10/28.)

FISHER, R. A. Statistical methods for research workers. 2nd edition. Edinburgh 1928. pp. xiv + 269 + vi tables. 15*s.* net. (*Recd.* 18/10/28.)

FOLTZER, JOSEPH. Artificial silk and its manufacture. 4th edition. Translated from the French by T. WOODHOUSE. London 1928. pp. xvi + 309. ill. 21*s.* net. (*Recd.* 18/10/28.)

FRIEND, JOHN NEWTON. [*Editor.*] A text-book of inorganic chemistry. Vol. VI. Part i. Nitrogen. By EDMUND BRYDGES RUDHALL PRIDEAUX and HERBERT LAMBOURNE. London 1928. pp. xxviii + 242. ill. 18*s.* net. (Two copies.)

GRUSE, WILLIAM A. Petroleum and its products: a chemical discussion of the properties, refining and utilization of petroleum. New York 1928. pp. viii + 377. 22*s.* 6*d.* net. (*Recd.* 18/10/28.)

GUGGENHEIM, MARKUS. Die biogenen Amine und ihre Bedeutung für die Physiologie und Pathologie des pflanzlichen und tierischen Stoffwechsels. 2nd edition. Berlin 1924. pp. viii + 474. ill. *M*. 21. (*Recd.* 19/7/28.)

HALL, R. E. [and others]. A physico-chemical study of scale formation and boiler-water conditioning. (Min. Met. Inv., Carnegie Inst. Tech. and U.S. Bureau of Mines, Bulletin 24.) Pittsburgh 1927. pp. xiv + 239. ill. 10*s*. net. (*Recd.* 2/6/28.)

HANDBUCH DER ALLGEMEINEN CHEMIE. Edited by PAUL WALDEN and CARL DRUCKER. VI. Chemische Valenz- und Bildungslehre. By FRITZ EPHRAIM. Leipzig 1928. pp. viii + 366. ill. (*Reference.*) *M*. 33.

HANDBUCH DER PHYSIK. Edited by HANS GEIGER and KARL SCHEEL. Vol. XIX. Herstellung und Messung des Lichts. Edited by HEINRICH KONEN. Berlin 1928. pp. xviii + 995. ill. *M*. 89. (*Recd.* 13/7/28.)

HANDBUCH DES ZEUGDRUCKS. Edited by GEORG GEORGIEVICS, R. HALLER, and LEON LICHTENSTEIN. Parts I and II. Leipzig 1927—1928. pp. 512 + 12 pattern sheets. ill. *M*. 46. (*Recd.* 19/7/28.)

HAUSER, ERNST A. The colloid chemistry of the rubber industry. London 1928. pp. 55. ill. 4*s*. 6*d*. net. (*Recd.* 23/10/28.)

HEATON, NOËL. Outlines of paint technology. Based on Hurst's "Painters' colours, oils, and varnishes." London 1928. pp. x + 400. ill. 24*s*. net. (*Recd.* 18/10/28.)

JORDAN, EDWIN OAKES, and FALK, ISIDORE SYDNEY. [*Editors.*] The newer knowledge of bacteriology and immunology. By eighty-two contributors. Chicago 1928. pp. x + 1196. ill. 50*s*. net. (*Recd.* 23/6/28.)

KAUSCH, OSKAR. Die aktive Kohle, ihre Herstellung und Verwendung. Halle (Saale) 1928. pp. vii + 342. ill. *M*. 23.50. (*Recd.* 19/7/28.)

KEMPF, RICHARD, and KUTTER, FRITZ. Schmelzpunktstabellen zur organischen Molekular-Analyse. Braunschweig 1928. pp. xvi + 766. ill. (*Reference.*) *M*. 68.

KERSHAW, JOHN BAKER CANNINGTON. The recovery and use of industrial and other wastes. London 1928. pp. xviii + 212. ill. 25*s*. net. (*Recd.* 18/10/28.)

KISTIAKOWSKY, GEORGE B. Photochemical processes. New York 1928. pp. 270. ill. 23*s*. net. (*Recd.* 18/10/28.)

LANGE, ERICH. Über Lösungs- und Verdünnungswärmen einiger starker Elektrolyte. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XIX.) Berlin 1928.

LAWRIE, JAMES W. Glycerol and the glycols: production

properties, and analyses. New York 1928. pp. 447. ill. 40*s*. net (*Recd.* 18/10/28.)

LIESEGANG, RAPHAEL ED. Biologische Kolloidchemie. Dresden 1928. pp. xii + 127. *M*. 9.50. (*Recd.* 21/6/28.)

MARTIN, GEOFFREY. A treatise on chemical engineering applied to the flow of industrial gases, steam, water, and liquid chemicals including the pneumatic transport of powders and granulated materials. London 1928. pp. xxiv + [443]. ill. 63*s*. net. (*Recd.* 18/10/28).

MORSE, JARED KIRTLAND. Bibliography of crystal structure. Chicago 1928. pp. xx + 164. ill. (*Reference*.). 15*s*. net.

ORTHNER, R. Chemisch-katalytische Vorgänge im Lebensprozess und ihre Bedeutung für die Arzneikunde (Uber die Herstellung, Prüfung und klinische Verwendung organotherapeutischer Präparate). (Sammlung, Vol. XXX.) Stuttgart 1928.

PLIMMER, ROBERT HENRY ADERS, and PLIMMER, VIOLET G. Food, health, vitamins: being a new edition of "Food and health." London 1928. pp. viii + 120. ill. 3*s*. net. (*Recd.* 23/10/28.)

SCHNEGG, HANS. Die biologische Betriebskontrolle des Brauereibetriebs. Stuttgart 1928. pp. x + 436. *M*. 22. (*Recd.* 20/8/28.)

SEIDELL, ATHERTON. Solubilities of inorganic and organic compounds. Supplement to the 2nd edition, containing data published during the years 1917—1926 inclusive. New York 1928. pp. vi, 1001 to 1571. (*Reference*.) 42*s*. net.

SMITH, STANLEY. The cellulose lacquers : a practical handbook on their manufacture. London 1928. pp. x + 145. ill. 7*s*. 6*d*. (*Recd.* 23/10/28.)

SMITHELLS, COLIN JAMES. Impurities in metals : their influence on structure and properties. pp. xii + 157. ill. 18*s*. net. (*Recd.* 18/10/28.)

SVENSK KEMISK TIDSKRIFT. Year XL, etc. Stockholm 1928 +. (*Reference*.)

ULLMANN, FRITZ. [*Editor*.] Enzyklopädie der technischen Chemie. 2nd edition. Vol. I, etc. Berlin 1928 +. ill. (*Reference*.)

WALTON, ROBERT P. [*Editor*.] A comprehensive survey of starch chemistry. Vol. I. New York 1928. pp. 240 + iv + 360. ill. 42*s*. net. (*Reference*.)

WARBURG, OTTO. Über die katalytischen Wirkungen der lebendigen Substanz. Berlin 1928. pp. vii + 528. ill. *M*. 38. (*Recd.* 21/6/28.)

ECHNOLOGY DEPT.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Extra Meeting held at the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W.1, on Thursday, November 29th, 1928, at 5.30 p.m., the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

The PRESIDENT stated that the Liversidge Lectures had been founded in accordance with the will of the late Professor Liversidge of the University of Sydney. By the terms of this will a sum of money was left to the Society in order to establish an annual lecture, in connection with similar lectures to be provided by the University of Sydney, The Royal Society of New South Wales, and The Australasian Association for the Advancement of Science. The PRESIDENT then read the clauses in the will dealing with the lectureships and stated that the Council had also established another series of lectures, called the Pedler Lectures, to perpetuate the memory of Sir Alexander Pedler, a generous benefactor to this Society. He said that the Council had decided that the Liversidge Lecture should be in the domain of Physical and Inorganic Chemistry and the Pedler Lecture in Organic Chemistry.

The PRESIDENT then called upon Professor Donnan to deliver his lecture entitled : " Physical Chemistry in the Service of Biology."

At the conclusion of the lecture, a vote of thanks to the lecturer was proposed by Mr. A. Chaston Chapman, seconded by Professor J. C. Philip, and carried unanimously, Professor Donnan making acknowledgment.

Ordinary Scientific Meeting, Thursday, December 6th, 1928, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

Certificates were read for the first time in favour of :—

Osman Achmatowicz, D.Chem., 348, Banbury Road, Oxford.
Harry James Barber, B.Sc., Ph.D., 30, Bridgeman Road, Teddington.

George Discombe, 48, King Edwards Grove, Teddington.
Bertram John Frederick Dorrington, B.Sc., 287, New Cross Road, S.E.14.
Eustace Leonard Gates-Warren, B.Sc., 17, Chatsworth Road, West Norwood, S.E. 27.
John Mildred Deane Gauntlett, M.Sc., St. Edward's School, Oxford.
Gordon Rupert Gedye, B.A., Trinity Hall, Cambridge.
Mary Stephen Lesslie, M.A., B.Sc., Ph.D., Bedford College, Regent's Park, N.W. 1.
Arthur James Mee, B.A., B.Sc., 62, Rectory Grove, S.E. 18.
Hermy Richard Napp, 3 & 4, Clements Inn, W.C. 2.
George David Parkes, B.Sc., M.A., D.Phil., Keble College, Oxford.
Chaturbhai Shankarbhai Patel, B.A., M.Sc., 2, Hyde Terrace, Leeds.
John Powdrill, 20, Catlow Hall Street, Oswaldtwistle.
Walter Gunnar Theodor Qvist, D.Phil., Abo Academy, Abo, Finland.
David Roberts, B.Sc., 37, Water Street, Llanllechid, Bangor.
James Walker Rowe, Malton, Holmesdale Road, Orpington.
Richard Stanley Wrey Thorne, B.Sc., A.R.C.S., 51, Newlyn Road, N. 17.
William Harold Juggins Vernon, D.Sc., Ph.D., F.I.C., 6, High Street, Wimbledon, S.W. 19.
Frederick James Wilkins, M.Sc., 4, Humberstone Road, Cambridge.

Mr. W. H. Gray and Dr. H. Hunter, were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected :—

Arthur Donald Ainley, B.Sc.
Nelson Alcock.
Rupchand Lilaram Alimchandani, M.Sc.
Simon Amstell.
William Rogie Angus, M.A., B.Sc., A.I.C.
Owen Stanley Brettle.
William Brooks.
Albert James Butterworth, B.Sc.
Duncan Arthur Campbell, M.Sc. Tech., B.Sc., A.I.C.
Charles Ernest Chard, B.Sc.
Joseph George Cockburn, B.Sc.
Aaron Cohen, B.Sc.
George Cecil Crummack.
Arthur William Martin Dickins.
William Leslie Dixon.
Allan Domleo, M.Sc.
Shankar Nagnath Godbole, M.Sc.
John Grant Gordon.
Constance Mary Groocock, B.Sc.
Frank Samuel Henry Head, B.Sc.
Rosalind Venetia Henley.
Gerald Uern Hopton, B.A.
William Robert Hardy Hurtley, B.Sc., Ph.D.
Ralph Anderson Jackson, B.A.
Joe Arthur Jessop, B.Sc.
Shankar Lal Jindal, M.Sc.
Zénab Kamil.
Kolar Ramakrishnaiyer Krishnaswami, B.A.
Julian Maynard Leonard.
Alfred Aaron Levi, M.Sc.
Alexander Lipworth.
Catherine Eleanor Mallen, M.A.
Jason Thomas William Mann, A.R.C.S.
Charles Carr Marginson, B.Sc.
Peter Mar, M.A., M.Sc.
Albert Edward Martin, B.Sc.
Kottiazath Narayana Menon, M.Sc.
Martha Elizabeth Murray, B.Sc., A.R.C.Sc.I., A.I.C.
Albert Edward Oxford, M.Sc., Ph.D.
Nellie Patterson.
Ronald Postell, B.A.
Alfred Russell, B.Sc.
Sidney John Saint, B.Sc., A.I.C.
Rupert Henry Saunders.
Walter William Saw, B.Sc.
Harry Selikman, B.Sc.
Kantilal Maganlal Sheth, M.Sc.
Henry George Simpson, B.Sc.
John William Smith, B.Sc.

William Solomon, B.Sc.
Cyril Gordon Sumner, M.Sc.
Ram Simha Thakur, M.Sc.
Albert Fred Tipler, B.Sc.
Arthur Ernest Vaughan.
Tekumalla Venkajee, B.A.
George Reginald Webster.
Margaret Katherine White, M.Sc.
William Dudley Williams, B.Sc., F.I.C.
William Francis Kenrick Wynne-Jones.
Taizo Yamashita.

The following papers were read :—

"The mechanism of corrosion." By U. R. Evans.

"Properties of conjugated compounds. Part VI. The dibromination products of cyclic butadienes." By E. H. Farmer and W. D. Scott.

"The stereoisomerism of disulphoxides and related substances. Part IV. Di- and tri-sulphoxides of trimethylenetrisulphide." By E. V. Bell and G. M. Bennett.

"The structure of organic molecular compounds." By G. M. Bennett and G. H. Willis.

"Hexa-aminobenzene." By B. Flürscheim and E. L. Holmes.

Ordinary Scientific Meeting, Thursday, December 20th, 1928, at 8 p.m., Professor J. F. Thorpe, C.B.E., D.Sc., F.R.S., President, in the Chair.

The President referred to the loss sustained by the Society, through death, of the following Fellows :—

	Elected.	Died.
Alfred Anderson	Dec. 2nd, 1915.	June 22nd.
John H. B. Jenkins	May 5th, 1892.	Dec. 11th.
John Edward L. Moore	Dec. 5th, 1907.	Dec. 15th.
Joseph Tcherniac	April 4th, 1878.	Dec. 11th.

It was announced that :—

1. The Subscription list to the Liebig Portrait Fund is still open and that subscriptions should be sent as soon as possible to the Treasurer.

2. Dr. O. Rosenheim, of the National Institute for Medical Research, had presented to the Society two manuscript letters of Liebig.

3. The President, Sir William Pope, K.B.E., F.R.S., and Prof. C. S. Gibson, O.B.E., had been appointed to represent the Society on the Federal Council of Pure and Applied Chemistry for 1929.

The following were formally admitted Fellows of the Chemical Society : A. A. Levi, A. Cohen, Jason T. W. Mann, J. W. Smith, G. R. Webster, K. R. Krishnaswami, and K. N. Menon.

Certificates were read for the first time in favour of :

Leslie Alderman Elson, B.Sc., A.I.C., 27, Truro Road, Wood Green, N. 22.
Masao Fukuda, Chemical Institute, Tohoku Imperial University, Sendai, Japan.
Sidney Herbert Jones, 85, St. George's Road, S.W. 1.
Thomas Edward Lescher, O.B.E., 16, Oxford Road, Birkdale, Lancs.
Charles Henry Maile, 3, Aubrey Walk, Kensington, W. 8.
Alfred Herbert Spong, B.Sc., Westminster College, Horseferry Road, S.W. 1.
Edgar Stedman, D.Sc., Ph.D., 12, Woodburn Terrace, Edinburgh.
John Norman Williams, A.M.I.Mech.E., 58, Alfriston Road, Clapham Common, S.W. 11.
Olli Viljo Anton Wuorinen, M.A., 1, Westfield Road, Edgbaston, Birmingham.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) :

Robert Douglas Coghill, George Street, Dunedin, New Zealand.
José Pascual, Prof., Universidad, Seville.
Alfred Wagner, Pesterzsebet, Hungary.

The following papers were read :

" Influence of poles and polar linkings on the course pursued by elimination reactions. Part II. Mechanism of exhaustive methylation (*continued*)." By C. K. INGOLD and C. C. N. VASS.

" Influence of poles and polar linkings on the course pursued by elimination reactions. Part III. A decomposition of dialkylsulphones." By G. W. FENTON and C. K. INGOLD.

" Influence of poles and polar linkings on tautomerism in the simple three-carbon system. Part I. Experiments illustrating prototropy and anionotropy in trialkylpropenylammonium derivatives." By C. K. INGOLD and E. ROTHSTEIN.

" Researches on residual affinity and co-ordination. Part XXXI. Molybdyl bis-β-diketones." By G. T. MORGAN and R. A. S. CASTELL.

" Interactions of selenium oxychloride and phenols." By G. T. MORGAN and F. H. BURSTALL.

" The parachor and chemical constitution. Part X. Singlet linkages in chelated co-ordination compounds." By S. SUGDEN.

The Council has made the following Grants from the Research Fund :

	£	s.	d.
Mutual solubility relations of methyl alcohol and saturated hydrocarbons. S. Amstell. (E. Lond. Coll.)	10	0	0
Stereoisomerism in polycyclic systems. B. K. Blount. (Oxford Univ.)	10	0	0
Electro-deposition of hydrogen and the measurement of the accessible areas of metallic surfaces. F. P. Bowden. (Cambridge Univ.)	10	0	0

	£	s.	d.
Physico-chemical studies of some of the rarer acids and their salts. H. T. S. Britton. (Exeter Univ. Coll.)	10	0	0
Additions to vinyl bromide and the properties of the substances obtained. G. N. Burkhardt. (Manchester Univ.)	10	0	0
Magnetic susceptibility of binary mixtures of organic liquids. (Miss) J. Cattermole. (Bedford Coll.)	6	0	0
Hydrogenation of conjugated compounds. C. M. Cawley. (Imperial Coll.)	10	0	0
Dynamics of surface action. F. H. Constable. (Cambridge Univ.)	20	0	0
Oxygen content of wrought iron and steel. C. H. Desch and H. G. Rains. (Sheffield Univ.)	10	0	0
Colour and fluorescence of the pyronine dyestuffs. A. N. Dey. (Imperial Coll.)	8	0	0
Preparation and properties of simple aliphatic unsaturated ketones with particular reference to isomeric change. E. N. Eccott (Imperial Coll.)	10	0	0
Quantum efficiency measurements on the induction period of the hydrogen–chlorine reaction. J. G. A. Griffiths. (Cambridge Univ.)	10	0	0
Mechanism of permanganate oxidation. (Miss) C. M. Groocock. (Leeds Univ.)	8	0	0
Action of Grignard compounds upon substituted *cyclo*hexene oxides and the preparation of substituted *cyclo*hexanones. F. S. H. Head. (E. Lond. Coll.)	10	0	0
Influence of the solvent in reaction velocity in its bearing on the quantum theory. F. W. Hodges. (Chelsea Polytechnic)...	5	0	0
Determination of the mutual solubility curves of secondary and *iso*butyl alcohols in water, and of the four isomeric butyl alcohols in non-polar solvents. D. C. Jones. (E. Lond. Coll.)	15	0	0
Synthesis of rubiadin and rubiadin glucoside. E. T. Jones. (E. Lond. Coll.)	8	0	0
Chemistry of β-lactones. A. Kandiah. (Imperial Coll.) ...	10	0	0
Orientation by positive poles. R. J. W. Le Fèvre. Univ. Coll., London)	16	0	0
Isomeric changes in unsaturated dibasic acids. J. T. W. Mann. (Imperial Coll.)	10	0	0
Synthesis of the glucoside of 6 : 6′-dibromoindigo. L. W. Mullinger. (E. Lond. Coll.)	8	0	0
Chemistry of 2 : 3- and 4-methyl *cyclo*hexanones. (Miss) M. P. Oommen. (Imperial Coll.)	10	0	0
Tautomerism of unsaturated acids. L. G. B. Parsons. (Imperial Coll.)	7	10	0
Side-chain reactivity in aromatic systems. C. S. Patel. (Leeds Univ.)	12	0	0
Effect of so-called " strainless " rings on the carbon tetrahedral angle. K. A. N. Rao. (Imperial Coll.)	10	0	0
Constitution and synthesis of certain glucosides, and the synthesis of certain hydroxy-acids. A. Robertson. (E. Lond. Coll.)	30	0	0
Effects of poles in the simple three-carbon system. E. Rothstein. (Leeds Univ.)	20	0	0
Investigations of diphenyl compounds. (Miss) F. R. Shaw. (Bedford Coll.)	10	0	0

	£	s.	d.
Symmetrical triad systems. C. W. Shoppee. (Leeds Univ.) ...	15	0	0
E.M.F. measurements in anhydrous ethyl alcohol. H. G. Simpson. (E. Lond. Coll.)	10	0	0
Nitrations of unsymmetrical ethers of quinol. J. C. Smith. (Oxford Univ.)	7	10	0
Three-carbon tautomerism. R. S. Thakur. (Imperial Coll.) ...	10	0	0
Certain additive properties of piperylene and isoprene. R. S. W. Thorne. (Imperial Coll.)	10	0	0
Heats of adsorption at low pressures. A. F. H. Ward. (Cambridge Univ.)	10	0	0
Investigations on the bivalency of carbon. A. M. Ward. (Sir John Cass Tech. Institute)	5	0	0
Synthesis of xanthones and of xanthone glucosides. R. B. Waters. (E. Lond. Coll.)	10	0	0
Substitution in the benzophenone and diphenylmethane series. W. A. Waters. (Durham Univ.)	5	0	0
Reactions of halogens with certain organic acids and acid anhydrides. H. B. Watson. (Bangor Univ. Coll.)	15	0	0
	£411	0	0

ANNUAL REPORTS ON THE PROGRESS OF CHEMISTRY.

Fellows are reminded that application for the Annual Reports for 1928, Volume XXV, at 5*s*. 6*d*. per copy should be received by Mr. S. E. Carr without delay. Application must be accompanied by a remittance for 5*s*. 6*d*.

List of Papers, or Abstracts thereof, received between November 15th and December 20th, 1928. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"The alkalinity of soap solutions as measured by indicators." By J. W. McBain and K. Hay.

"The formation of Liesegang rings as a periodic coagulation phenomenon." By J. R. I. Hepburn.

"The degradation of *l*-arabinose." By V. Deulofeu and R. J. Selva.

"Activated magnesium." By P. Maitland.

"*N*-Substituted derivatives of piperazine and ethylenediamine. Part I. The preparation of *N*-monosubstituted derivatives of piperazine and ethylenediamine." By T. S. Moore, M. Boyle, and V. M. Thorn.

"A steam drying oven with detachable base." By H. J. S. Sand.

"Constitutional influences on the conversion of azo-naphthols into their azo-sulphites and their bearing on the structure of α- and β-naphthol." By A. T. King.

"Tertiary phosphines containing the *n*-butyl radical." By W. C. DAVIES and W. J. JONES.

"The reaction between ferric sulphate solution and cuprous sulphide." By L. WHITBY.

"The decomposition of methane. Part I." By C. W. H. JONES.

"Note on the influence of colloids on the precipitation of salts." By R. DICKINSON.

"The reduction of *m*-nitrobenzaldehyde and some of its derivatives in neutral solution." By W. M. CUMMING and J. C. EATON.

"Non-existence of isomerism among the dialkyltelluronium dihalides." By H. D. K. DREW.

"The formation of quaternary ammonium compounds in solution. Part I. Influence of polarity of the solvent." By R. N. KERR.

"The synthesis of *meso*-alkyl and *meso*-aryl anthracene derivatives. Part V." By E. DE B. BARNETT and N. F. GOODWAY.

"The quaternary system: lead acetate–lead chloride–acetic acid–water at 25°." By K. SANDVED.

"The mechanism of thermal decomposition of the normal paraffins." By E. N. HAGUE and R. V. WHEELER.

"Effect of the addition of hydrogen and water on the radiation emitted from the carbon monoxide flame." By W. E. GARNER and F. ROFFEY.

"Synthetical experiments in the *iso*flavone group. Part IV. A synthesis of 2-methylirigenol." By W. BAKER and R. ROBINSON.

"Studies in the phenylsuccinic acid series. Part IX. The resolution of *r*-diphenylsuccin-α- and -β-naphthylamic acids into their optical antipodes." By H. WREN and E. WRIGHT.

"Studies in the phenylsuccinic acid series. Part X. Racemisation phenomena observed during the action of water and bases on the optically active diphenylsuccinic anhydrides." By H. WREN and E. WRIGHT.

"Note on the preparation of quinaldinyl chloride and quinaldinyl acetoacetic ester." By D. L. HAMMICK and W. P. DICKINSON.

"A synthesis of *iso*pianic acid." By S. N. CHAKRAVARTI and W. H. PERKIN.

"Synthesis of 3 : 10-dimethoxytetrahydroprotoberberine." By S. N. CHAKRAVARTI and W. H. PERKIN.

"Nitrosylsulphuric acid. Part II." By C. W. H. JONES, W. J. PRICE, and H. W. WEBB.

"A synthesis of *iso*naphthathioxin." By A. COHEN and S. SMILES.

"The acylation of diazomethane. A criticism." By T. MALKIN.

"Asymmetric synthesis and asymmetric induction." By A. MCKENZIE and A. G. MITCHELL.

"Some derivatives of the aliphatic glycols." By G. M. Bennett and F. Heathcoat.

"The rearrangement of benzyl phenyl ethers." By W. F. Short and M. L. Stewart.

"The chlorination of phthalic acid in alkaline solution." By E. E. Ayling.

"The conversion of tetramethyl γ- and δ-gluconolactones to the corresponding mannonolactones, and of the trimethyl γ- and δ-xylonolactones to the corresponding lyxonolactones." By W. N. Haworth and C. W. Long.

"Mercury compounds of thiophen and selenophen." By H. V. A. Briscoe, J. B. Peel, and G. W. Young.

"Basic chlorides and addition compounds from metallic chlorides and hexamethylenetetramine. Exceptional behaviour of nickel chloride." By J. C. Duff and E. J. Bills.

"The preparation of some metallic chromates." By S. H. C. Briggs.

"Chromatocobaltiammines. Part II. The dichromatotetrammine cobaltiates and the maximum co-ordination number of cobalt." By S. H. C. Briggs.

"The potassium and sodium acid salts of normal fatty acids." By T. Malkin.

"The boric acids." By L. F. Gilbert and M. Levi.

"The influence of substituents on the Reimar–Tiemann reaction." By H. H. Hodgson and T. A. Jenkinson.

"The methyl urethanes of the isomeric-α-hydroxyphenylethyldimethylamines and their miotic activity." By E. Stedman and E. Stedman (Mrs.).

"The velocity of decomposition of heterocyclic diazonium salts. Part II. Diazonium salts of the triazole series." By J. Reilly and D. Madden.

"The preparation of α- and β-methyl glucoside." By T. S. Patterson and J. Robertson.

"The chemistry of the three-carbon system. Part XX. *cyclo*-Pentylideneacetone and *cyclo*pentylidenemethylethyl ketone." By A. H. Dickins, W. E. Hugh, and G. A. R. Kon.

"The vapour density and pressure of ammonium iodide." By R. H. Purcell and W. de Lange.

"Non-existence of isomerism among the dialkyl telluronium dihalides." By H. D. K. Drew.

"Acid and salt effects in catalysed reactions. Part XIX. The catalytic activity of chloroacetic acid in the hydrolysis of ethyl acetate." By H. M. Dawson and W. Lowson.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

HALDANE, JOHN SCOTT. Gases and liquids: a contribution to molecular physics. Edinburgh 1928. pp. xvi + 334. ill. 18*s*. net. (*Recd.* 4/12/28.) From the Publishers: Messrs. Oliver & Boyd.

NORDISKA KEMISTMÖTET, III. Förhandlingar och föredrag. Helsingfors 1928. pp. iv + 246. ill. (*Reference.*)
From Professor Gustaf Komppa.

WILLSTÄTTER, RICHARD [and others]. Untersuchungen über Enzyme. 2 vols. Berlin 1928. pp. xvi + 1775. ill. (*Reference*). *M*. 124. From the Author.

II. *By Purchase.*

BAEYER, O. VON, and GERHARDT, U. Die interferometrische Messung im Ultramikroskop sichtbar gemachter Teilchen von 200 m μ Durchmesser. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XX.) Berlin 1928.

COLLOID SYMPOSIUM MONOGRAPH. Papers presented at the sixth Symposium on Colloid Chemistry. New York 1928. pp. 346. ill. 27*s*. net. (*Recd.* 23/11/28.)

FISCHER, EMIL J. Die natürlichen und künstlichen Asphalte und Peche. Dresden 1928. pp. ix + 114. *M*. 9.50. (*Recd.* 22/11/28.)

FRIEND, JOHN NEWTON. [Editor.] A text-book of inorganic chemistry. Vol. XI. Organometallic compounds. Part i. Derivatives of the elements of groups I to IV. By ARCHIBALD EDWIN GODDARD and DOROTHY GODDARD. London 1928. pp. xxviii + 418. 25*s*. net. (Two copies.)

HALLER, ROBERT. Chemische Technologie der Baumwolle.—Mechanische Hilfsmittel zur Veredlung der Baumwolltextilien. By HUGO GLAFEY. Berlin 1928. pp. xiv + 711. ill. *M*. 67.50. (*Recd.* 22/11/28.)

HANDBUCH DER ALLGEMEINEN CHEMIE. Edited by PAUL WALDEN and CARL DRUCKER. VII. Thermochemie. Arbeitsmethoden und Analyse der thermochemischen Daten insbesondere in dem Gebiete der organischen Verbindungen. By WOJCIECH SWIETOSLAWSKI. Leipzig 1928. pp. xi + 253. ill. (*Reference.*) *M*. 25.

HANDBUCH DER PHYSIK. Edited by HANS GEIGER and KARL SCHEEL. Vol. VI. Mechanik der elastischen Körper. Edited by RICHARD GRAMMEL. Berlin 1928. pp. xii + 632. ill. *M*. 59. (*Recd.* 23/11/28.)

HESS, KURT. Die Chemie der Zellulose und ihrer Begleiter. Mit einem Beitrag: Micellartheorie und Quellung der Zellulose. By JOHAN RUDOLF KATZ: und einem Anhang: Das färberische Verhalten der Baumwolle und der aus ihr hergestellten Kunst-

fasern. By ROBERT HALLER. Leipzig 1928. pp. xxi + 836. ill. *M.* 59. (*Recd.* 22/11/28.)

JOHNSON, OBED SIMON. A study of Chinese alchemy. Shanghai 1928. pp. xiv + 156. 12*s.* net. (*Recd.* 24/11/28.)

SCHLOMANN, ALFRED. [Editor]. Illustrierte technische Wörterbücher in sechs Sprachen: Deutsch, Englisch, Russisch, Französisch, Italienisch, Spanisch. New edition. Vol. II. Elektrotechnik und Elektrochemie. Berlin 1928. pp. xxiv + 1304. ill. (*Reference.*) *M.* 80.

STOKLASA, JULIUS. Festschrift anlässlich des siebzigsten Geburtstages. Edited by ERNST GUSTAV DOERELL, JAROSLAV KŘÍŽENECKÝ, EDUARD REICH, and BOHUŠ VLÁČIL. Berlin 1928. pp. 434. ill. *M.* 22. (*Recd.* 22/11/28.)

UNITED STATES. *Department of Commerce.* Bureau of Standards Journal of Research. Vol. I, etc. Washington 1928+. (*Reference.*)

WINCHELL, ALEXANDER NEWTON. The optic and microscopic characters of artificial minerals. Madison 1927. pp. xvi + 215. ill. 7*s.* 6*d.* net. (*Recd.* 31/7/28.)

YOE, JOHN H. Photometric chemical analysis (colorimetry and nephelometry). Vol. I. New York 1928. pp. xxii + 771. ill. 42*s.* 6*d.* net. (*Recd.* 18/10/28.)

III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Bulletin No. 37. Paper-pulp and cellulose from the eucalypts by the sulphite process. By L. R. BENJAMIN and J. L. SOMERVILLE. Melbourne 1928. pp. 84. ill.

—— —— Pamphlet No. 8. Methods for the examination of soils. By JAMES ARTHUR PRESCOTT and C. S. PIPER. Melbourne 1928. pp. 52. ill.

—— —— Pamphlet No. 9. A forest products laboratory for Australia. Justification for its creation, outline of its organization and rough estimate of its cost. By ALEXANDER JAMES GIBSON. Melbourne 1928. pp. 28.

BERRY, PHILIP A. Liquor hydrogenii peroxidi: its assay, characters and tests. Adelaide 1928. pp. 11.

BOLZINGER, ANTOINE. Electrolytic corrosion of gas mains: a study of the phenomena. (From the *Gas J.*, 1927, **179**.)

BRITISH SCIENCE GUILD. Report of the Committee appointed to consider the reform of the British patent system. London [1928]. pp. 48.

CAMBRIDGE UNIVERSITY. Abstracts of dissertations approved for the Ph.D., M.Sc., and M.Litt. degrees in the University of Cambridge for the Academical year 1926–1927. Cambridge 1928. pp. 89.

COHEN, BARNETT. Synthesis and indicator properties of some new sulphonphthaleins. (From the *U.S. Public Health Reports*, 1926, **41**.

ENGLISH, L. L. Some properties of oil emulsions influencing insecticidal efficiency. (From the *Illinois Natural History Survey Bulletin*, 1928, **17**.)

EVANS, EDWARD VICTOR. William Young memorial lecture. Edinburgh 1928. pp. 12. ill.

FARIS, CHARLES HENRY. The uses of nickel deposits for engineering purposes. (From the *Trans. Inst. Engineers & Shipbuilders of Scotland*, 1927.) ill.

FLINN, FREDERICK B. The so-called action of acid sodium phosphate in delaying the onset of fatigue. (From the *U.S. Public Health Reports*, 1926, **41**.) ill.

MENSCHUTKIN, BORIS NIKOLAEVITSCH. A Russian physical chemist of the eighteenth century. [M. W. Lomonossow.] (From the *J. Chem. Education*, 1927, **4**.)

—— The work of Berthelot on the history of chemistry. Sosnovka 1927. pp. [25]. [In Russian.]

—— The life and activity of Eugen Vladislavovich Biron. [In Russian. English summary. n.d.]

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 43. Spontaneous electrification in dust clouds (with special reference to coal dust clouds). By SAMUEL CYRIL BLACKTIN. London 1928. pp. 19. ill.

—— —— Paper No. 44. The Safety in Mines Research Laboratories, Sheffield : a description. London 1928. pp. 19 + 10 plates.

—— —— Paper No. 46. The ignition of firedamp by the heat of impact of rocks. By MAURICE JOHN BURGESS and RICHARD VERNON WHEELER. London 1928. pp. 25. ill.

—— —— Paper No. 47. Pyritic oxidation with special reference to the Ravine seam. By H. MACPHERSON, NEVILLE SIMPKIN, and SYDNEY VICTOR WILD. London 1928. pp. 23 + 5 plates.

—— —— Paper No. 48. The relative inflammability and explosibility of coal dusts. By T. N. MASON and RICHARD VERNON WHEELER. London 1928. pp. 13. ill.

SAGER, GEORGE F. A study of the production of chromium surfaces for retarding the corrosion of nickel at high temperatures. (*Renesselaer Polytechnic Inst., Eng. Sci. Series*, No. 20.) 1927.

SCHAEFFER, GEORGES [and others]. Recherches physiologiques sur les levains minéraux à base d'alun. (From the *Bull. Soc. Sci. Hyg. Alimentaire*, 1928, **16**.) ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. The investigation of atmospheric pollution. Report on observations in the year ending March 31st, 1927. 13th report. London 1928. pp. iv + 54.

—— Report of the Water Pollution Research Board for the year 1927—8. London 1928. pp. iv + 18.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Building Research*. Bulletin No. 3. Effects of moisture changes on building materials. By REGINALD EDWARD STRADLING. London 1928. pp. iv + 22. ill.

—— —— Bulletin No. 4. The manufacture of clay roofing tiles in France, Belgium and Holland. By W. A. MCINTYRE and A. ZAIMAN. London 1928. pp. iv + 18. ill.

—— —— Bulletin No. 5. The properties of breeze and clinker aggregates and methods of testing their soundness. By FREDERICK MEASHAM LEA. London 1928. pp. iv + 17.

—— —— Technical Paper No. 6. Thermal conductivities of walls, concretes and plasters. By EZER GRIFFITHS. London 1928. pp. iv + 19. ill.

—— *Forest Products Research*. The uses of home-grown timbers. London 1928. pp. vi + 36.

—— *Fuel Research*. Physical and chemical survey of the national coal resources. No. 11. The coalfields of Scotland. The carbonisation of "Kinneil gas" coal. London 1928. pp. vi + 35. ill.

—— —— Physical and chemical survey of the national coal resources. No. 12. The Bristol and Somerset coalfield. The carbonisation of "Parkfield large gas" coal. London 1928. pp. vi + 35. ill.

SUMINOKURA, KUNOHIKO, and NAKAHARA, ZENICHI. A new colorimetric microdetermination of furfural. (From *Tottori Nōgaku-Kwaihō*, 1928, **1**). [In Japanese. Summary in English.]

UNITED STATES. *Department of Agriculture*. Circular No. 35. The commercial production of sauerkraut. By EDWIN LEFEVRE. Washington 1928. pp. 30. ill.

—— —— Technical Bulletin No. 16. Methods of extracting volatile oils from plant material and the production of such oils in the United States. By ARTHUR F. SIEVERS. Washington 1928. pp. 35. ill.

—— —— Technical Bulletin No. 74. The value of inert gas as a preventive of dust explosions in grinding equipment. By HYLTON R. BROWN. Washington 1928. pp. 23. ill.

—— *Department of Commerce*. Bureau of Standards. Circular No. 360. United States Government master specification for integral waterproofing material (for use with Portland cement mortar or concrete). Washington 1928. pp. 4.

—— *National Safety Council*. Chemical Section. Final report of the Committee on spray coating. Chicago 1927. pp. 53. ill.

WEIMARN, PETR PETROVIC [and others]. Dispersoidological investigations. Parts xii—xxiii. (From the *Rep. Industrial Research Inst., Osaka*, 1926—28, **7—9**.)

CHNOLOGY DEPT.

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FEB 20 1929
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PROCEEDINGS
OF THE
CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, January 17th, 1929, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Herbert Appleby	June 19th, 1879.	Nov. 17th, 1928.
George Brownen	Feb. 20th, 1873.	Nov. 12th, 1928.
Michael Hiddingh	Mar. 17th, 1881.	1928.
André Job	Feb. 20th, 1919.	Aug. 16th, 1928.
Michitada Kawakita	Dec. 16th, 1886.	1928.
Tanjore S. Natrajan	Dec. 5th, 1912.	Aug. 27th, 1928.
Dadabhai C. Talati	Feb. 21st, 1924.	Dec. 17th, 1928.
Charles R. Young	June 18th, 1908.	Dec. 26th, 1928.

The PRESIDENT announced that the names of the Members of Council who retire at the Annual General Meeting on March 21st, 1929, and who are ineligible for re-election to the same office until after the lapse of one year, are as follows:

Vice-President who has filled the Office of President: Prof. P. F. FRANKLAND.

Vice-Presidents who have not filled the Office of President: Sir ROBERT ROBERTSON and Prof. R. ROBINSON.

Ordinary Members of Council:

(*a*) Town Members: None to retire. (Owing to there having been six vacancies in 1928.)

(*b*) Country Members: Prof. H. V. A. BRISCOE, Prof. R. WHYTLAW GRAY, Dr. T. J. NOLAN, and Prof. K. J. P. ORTON.

The following vacant places in the Council fall due to be filled at the Annual General Meeting of the Society, which will be held in Leeds on Thursday, March 21st, 1929, at 3.15 p.m.:

Vice-Presidents who have filled the Office of President	One vacancy.
Vice-Presidents who have not filled the Office of President	Two vacancies.

Ordinary Members of Council :

Country Members (*i.e.* those living beyond a radius of fifty miles from Charing Cross)... Four vacancies.

The following were formally admitted Fellows of the Chemical Society : Spencer Mort, W. Rogie Angus, Rosalind V. Henley, Z. Kamil.

Certificates were read for the first time in favour of :

Sidney Harold Dalton Cakebread, B.Sc., 35, Godstone Road, Purley, Surrey.
Nani Gopal Chakravarti, M.Sc., Presidency College, Calcutta.
Charles Gaspard Daubney, M.Sc., A.I.C., 25, Holwood Road, Bromley, Kent.
Kenneth Docksey, Knypersley Villas, Biddulph, Stoke-on-Trent.
Henry Vincent Dodd, Rodenhurst, Belmont, Surrey.
Alfred Henry Dunhill, M.C., White Fryars, Stanmore, Middlesex.
Richard Campbell Feather, B.A., B.Sc., 3, Claremont Road, East Twickenham.
James George Fife, B.Sc., A.I.C., 5, Warwick Road, Wanstead, E. 11.
Ram Charan Gupta, Prof., M.Sc., Maharana's College, Udaipur, Rajputana, India.
Percy John Hardwick, B.Sc., 11, Balmuir Gardens, Putney, S.W. 15.
Arnold Kershaw, B.Sc., 127, Northgate, Huddersfield.
Gerald Rhys Phillips, B.Sc., 6, Wimborne Terrace, Bideford.
Eloi Ricard, Distilleries des Deux-Sèvres, Melle, France.
Frederick William Searle, 152, Downton Avenue, Streatham Hill, S.W. 2.
Leslie Percy Walls, B.A., B.Sc., 167, Hook Road, Epsom.
Denis Ward, B.Sc., Clevedon, Wheatley Avenue, Ben Rhydding, Ilkley.
Ernest Thomas Wilkins, M.Sc., 54, Pepys Road, New Cross, S.E. 14.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) in favour of :

Homer Adkins, Prof., M.A., Ph.D., 2103, Rowley Avenue, Madison, Wisconsin, U.S.A.
Harold Eugene Bigelow, Prof., A.M., Ph.D., Sackville, New Brunswick, Canada.
Livio Cambi, Prof., D.Sc., Viale Romagna 33, Milan (133), Italy.
Pokianath Balarama Kurup, B.A., The Calicut Soaps & Candles Co., Ltd., Calicut, India.
Clarence Charles Vogt, A.M., Ph.D., Armstrong Cork Co., Lancaster, Pa., U.S.A.

The following papers were read :

"The chemistry of the three-carbon system. Part XX. *cyclo*-Pentylideneacetone and *cyclo*pentylidenemethyl ethyl ketone." By A. H. Dickins, W. E. Hugh, and G. A. R. Kon.

"Non-existence of isomerism among the dialkyl telluronium dihalides." By H. D. K. Drew.

"The enzymic synthesis of hydroxyethylphosphoric acid." By H. D. Kay.

THE 88th ANNUAL GENERAL MEETING AND ANNIVERSARY DINNER, LEEDS, 21st MARCH, 1929.

The Council has decided that the 88th Annual General Meeting and the Anniversary Dinner of the Society shall take place in Leeds, on Thursday, 21st March, 1929.

It is the desire of the Council to make these meetings a special occasion for a general gathering of Chemists and those associated with Chemistry in the North of England, and in order that they may be representative of all branches of chemistry and chemical industry, the affiliated Societies and a number of Industrial Organisations have been invited and have agreed to co-operate. A General Committee has been formed, and at a meeting held at Leeds University on the 7th December the general arrangements were considered and an Executive Committee appointed to carry out the necessary details. Mr. H. S. Patterson (The University, Leeds) has kindly agreed to act as Hon. Secretary.

The Annual General Meeting will be held in the University of Leeds on Thursday, 21st March. The business portion of the meeting (open to Fellows only) will be held in the Chemistry Lecture Theatre at 3.15 p.m. The Presidential Address entitled, "Co-operation in Science and Industry," will be delivered by Professor J. F. Thorpe, C.B.E., D.Sc., F.R.S., in the Great Hall of the University at 4.30 p.m.

The Anniversary Dinner will take place the same evening (Thursday, March 21st) at 7 for 7.15 p.m. in the Town Hall, Leeds, and the Council is gratified to state that the Society is to be honoured by the presence of the Viscount Lascelles, K.G., D.S.O., as the principal guest of the evening.

The Dinner Tickets will be 12*s*. 6*d*. each, including gratuities.

The Council hopes that there will be present a large and representative gathering of Fellows and others, with their guests (ladies or gentlemen). It will facilitate arrangements if application for dinner tickets be made at an early date, and in any event before *Thursday*, 14*th March*, 1929. Separate tables will be arranged as far as possible for members and their friends who desire to sit together.

Applications should be sent direct to *Mr. S. E. Carr, The Chemical Society, Burlington House, Piccadilly, London, W.* 1, and must be accompanied by a remittance for the number of tickets ordered.

The Directors of the British Dyestuffs Corporation, Ltd., have kindly invited a limited number of Fellows and others attending the meetings of the Society on the 21st March to visit their works and laboratories at Huddersfield on Friday, 22nd March. Those desiring

to avail themselves of this privilege must inform Mr. H. S. Patterson (The University, Leeds) of their intention before the 19th March.

The Railway Clearing House has granted facilities by which those attending the meetings on the 21st March will be able to travel from all parts of the country to Leeds at the reduced rate of an ordinary fare and one-third for the double journey, provided that not less than 100 persons avail themselves of this privilege. Tickets will be available from the 20th March to the 22nd March (inclusive). Those who wish to take advantage of this privilege must apply to Mr. S. E. Carr, The Chemical Society, Burlington House, Piccadilly, London, W.1, for a signed voucher, which must be surrendered at the Booking Office when the ticket is being purchased.

Hotels.

The following is a list of the hotels in Leeds at which accommodation can be secured:

Cromer Hall Private Hotel.	Mount Hotel.
Great Northern Hotel.	Queen's Hotel.
Hotel Metropole.	Victory Hotel.

Early application is advisable.

List of Papers, or Abstracts thereof, received between December 20th, 1928, and January 17th, 1929. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting or have appeared in the Journal.)

"The inflammation of mixtures of the olefines and air in a closed spherical vessel." By G. B. MAXWELL and R. V. WHEELER.

"Indian turpentine from *Pinus longifolia*, Roxb. Part V. The oxidation of d-Δ^3-carene with Beckmann's chromic acid mixture." By C. S. GIBSON and J. L. SIMONSEN.

"The electrolytic reduction of the imides of cyclic acids. (Preliminary note.)" By K. N. MENON and J. L. SIMONSEN.

"Diphenylaminearsinic acid. Part I. Derivatives of diphenylamine-4-arsinic acid." By H. J. BARBER.

"Orientation effects in the diphenyl series. Part VII. The effect of substituents in one nucleus on the ratio of *ortho* : *para* nitration in the other. The nitration of 2- and 4-nitro- and 2 : 4- and 2 : 4′-dinitro-diphenyl and of diphenyl-4-carboxylic acid." By H. C. GULL and E. E. TURNER.

"The nitration of phenyl*cyclo*hexane and of its *p*-halogeno-derivatives." By H. A. MAYES and E. E. TURNER.

"The nitration of 4-chloro-4′-bromo-benzophenone and -diphenyl sulphone, and the attempted nitration of 4-chloro-4′-bromodiphenyl." By L. G. GROVES and E. E. TURNER.

"The scission of diaryl ethers and related compounds by means of piperidine. Part II. The nitration of 2 : 4 : 4′-trichlorodiphenyl ether, 2 : 4-dichlorophenyl *p*-toluenesulphonate, and 2 : 4-dichlorophenyl benzoate." By L. G. GROVES, E. E. TURNER, and (in part) G. I. SHARP.

"Synthesis of *l*-2 : 3 : 4 : 6-tetramethyl δ-gluconolactone and of *l*-2 : 3 : 4 : 6-tetramethyl δ-mannonolactone from *l*-2 : 3 : 5-trimethyl arabofuranose." By W. N. HAWORTH and S. PEAT.

"Organic derivatives of silicon. Part XXXVI. The formation of tri- and tetra-phenylsilicane and complex synthetical products from octaphenyl*cyclo*silicotetrane." By F. S. KIPPING and A. G. MURRAY.

"Organic derivatives of silicon. Part XXXVII. Some derivatives of tri-*p*-tolylsilicane." By A. R. STEELE and F. S. KIPPING.

"Some new sulphur derivatives of aromatic organic arsenicals. Part I." By J. G. EVERETT.

"The hydrates of neodymium selenate and their solubilities in water." By J. A. N. FRIEND.

"The ternary system mercuric chloride–mercuric iodide–water." By R. SUGDEN.

"The nature of the alternating effect in carbon chains. Part XXX. The nitration of phenylbromocyanonitromethane, with special reference to an alleged example of intramolecular meta-rearrangement." By J. W. BAKER and C. K. INGOLD.

"The quinoxaline synthesis: some derivatives of 2 : 3-dimethylquinoxaline." By S. T. HENDERSON.

"Optical activity and the polarity of substituent groups. Part X. Influence of ionisable groups on the rotatory power of *l*-menthyl benzoate." By H. G. RULE and W. E. MACGILLIVRAY.

"The solubility of iodine in solutions of halides." By J. S. CARTER and C. R. HOSKINS.

"Photochemical equilibrium in nitrogen peroxide. Part II. The dependence of quantum efficiency on wave-length." By R. G. W. NORRISH.

"Photochemical equilibrium in nitrogen peroxide. Part III. A comparison of the thermal, photochemical, and electrical decompositions, and a general theory of the change." By R. G. W. NORRISH.

"Photochemical equilibrium in nitrogen peroxide. Part IV. Fluorescence and photochemical activity." By R. G. W. NORRISH.

"Low-temperature oxidation of hydrocarbons. Part I. The pressure–temperature curves of amylene–oxygen mixtures." By J. S. LEWIS.

"Substituted aromatic aldehydes in Häntzsch's pyridine condensation. Part I. Methoxy-, chloro-, and hydroxy-benzaldehydes." By L. E. HINKEL and W. R. MADEL.

"Studies in keto-lactol tautomerism. Part II. Influence of the *cyclo*hexane ring on the tautomeric character of *cyclo*hexane-1-acetone-1-malonic acid; a comparison with *cyclo*pentane-1-acetone-1-malonic acid and the syntheses of the corresponding δ-keto-monobasic acids." By M. QUDRAT-I-KHUDA.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, FEBRUARY 21ST, 1929.

ACHMATOWICZ, OSMAN, 348, Banbury Road, Oxford. Tartar. Research Student. Doctor of Chemistry, Vilno University. Has been engaged in research for five years at Vilno University. (*Signed by*) W. H. Perkin, S. G. P. Plant, E. Hope, J. M. Gulland.

BARBER, HARRY JAMES, 30, Bridgeman Road, Teddington, Middlesex. British. Research Chemist. B.Sc. (Lond.), Ph.D. (Lond.) (1st Class Hons. Chem.). Hons. Chemistry School, King's College, 1922–24. Postgraduate Research, King's College, 1924–27. Research, May & Baker, Ltd., 1927–present. *J.C.S.*, 1928, 1141. (*Signed by*) Samuel Smiles, A. J. Allmand, A. J. Ewins.

CAKEBREAD, SIDNEY HAROLD DALTON, Alwinton, 35, Godstone Road, Purley, Surrey. British. Chemist. B.Sc., East London College, University of London. To receive the *Journal* and to keep in touch with recent work in Chemistry. One of the Senior Chemists in the Laboratories of Messrs. J. Lyons & Co. (*Signed by*) J. R. Partington, F. E. King, W. H. Patterson.

CAWLEY, CHARLES MILLS, 69, Richmond Road, Gillingham, Kent. English. Working for the M.Sc. degree. A.R.C.S. and B.Sc. at the Royal College of Science. For two years as student of the R.C.S. At present a research student in organic chemistry. (*Signed by*) E. H. Farmer, Jocelyn Thorpe, M. A. Whiteley.

CHAKRAVARTI, NANI GOPAL, Department of Chemistry, Presidency College, Calcutta, India. Indian. Demonstrator in Chemistry, Presidency College, Calcutta, since 1926. M.Sc. (Lucknow University). University Post-Graduate Lecturer in Chemistry, Calcutta University since 1927. (*Signed by*) A. C. Sircar, P. K. Dutt, R. N. Sen, P. Neoji, J. N. Mukherjee, Chuni Lal Bose.

CHALLINOR, SYDNEY WILLIAM, The "Rosary," Myvod Road, Wednesbury, Staffs. British. Research Student. Hons. B.Sc. (Birmingham University). (*Signed by*) W. N. Haworth, H. D. K. Drew, E. L. Hirst.

CONSTABLE, FREDERICK HURN, St. John's College, Cambridge. British. Fellow of St. John's College. M.A. (Cantab.), D.Sc. (Lond.), Ph.D. (Cantab.), Ph.D. (Lond.), F.I.C. Publications: "On Surface Catalysis in Heterogeneous Systems," *Proc. Roy. Soc., A.*, **106**, 251; **107**, 255 (with W. G. Palmer); **107**, 270, 279; **108**, 355; **110**, 283; **113**, 254; **115**, 570. *Proc. Camb. Phil. Soc.*, **22**, 738; **23**, 172, 432, 594, 832. "The Nature of the Sintering

of Active Copper Catalysts," *J.C.S.*, 1927, 1578. (*Signed by*) T. M. Lowry, F. G. Mann, Eric K. Rideal.

DAUBNEY, CHARLES GASPARD, "Normanhurst," 25, Holwood Road, Bromley, Kent. British. Chemist, Government Laboratory, London. M.Sc. (London), A.I.C. "Research on the Antiscorbutic Factor in Lemon Juice," *Biochem. J.*, XX, 1926, 519, 1055; "Research on the Lipins of Yeast," *ibid.*, XXI, 1927, 323; "Research on the Unsaponifiable Fraction of Yeast Fat," *ibid.*, XXI, 869; "Note on Analysis of Mixed Paints," *J.S.C.I.*, Nov. 1928, 1147. (*Signed by*) A. G. Francis, Cecil O. Harvey, L. J. Chalk.

DESAI, RANCHHODJI DAJIBHAI, 21, Cromwell Road, South Kensington, S.W. 7. Indian. Research Student. B.A., M.Sc. (Bombay), A.I.I.Sc. "Hongay Oil" (Pongamia Glabra, vent.); "Iodine as a Catalyst in Reactions involving Elimination of HCl" (*J. Ind. Inst. Sci.*, 1923 and 1924); "Nitro-derivatives of Dibenzylaniline" (*J. Ind. Chem. Soc.*, 1928, **5**, 425). Served as a lecturer in chemistry for four years in Wilson College, Bombay, and Baroda College, Baroda. (*Signed by*) Jocelyn Thorpe, W. E. Hugh, M. A. Whiteley.

DEY, AMARENDRA NATH, 153, Chamberlayne Road, Kensal Rise, N.W. 10 (c/o Thos. Cook & Son, Berkeley Street, London). British subject. Student, doing research work in the Imperial College of Science and Technology, London. M.Sc., Allahabad University, British India; Passed the B.Sc., Allahabad University, obtaining the highest marks in chemistry, also got Government Scholarship of Merit. Passed first in M.Sc. and also obtained the highest marks among the candidates of M.A. and M.Sc. of the same year in that University. University Scholarship for two years. Doing research work since 1925. Research student in Allahabad University for three years. At present carrying on research in the Imperial College under Prof. Thorpe. Published papers, "Induced Oxidation and its Mechanism," *Zeit. anorg. Chem.*, 1925, **144**, 307–12; "Oxidation of Organic Acids by Potassium Permanganate and Chromic Acid," *Zeit. Elect. Chem.*, 1926, **32**, 586–96. (*Signed by*) Jocelyn Thorpe, W. E. Hugh, R. P. Linstead.

DISCOMBE, GEORGE, 48, King Edward's Grove, Teddington, Middlesex. English. Student of Chemistry at Christ's Hospital and University College, London. Placed "proxime accessit" to the Andrews Scholarship in 1927, and awarded a University Scholarship in Chemistry in July 1928. Has spent one vacation and proposes to spend others in studying technical methods of analysis. (*Signed by*) F. G. Donnan, O. L. Brady, H. Terrey.

DOCKSEY, KENNETH, Knypersley Villas, Biddulph, Stoke-on-Trent. British. Metallurgical Chemist. City and Guilds Final Cert. Iron and Steel Manufacture. North Staffs. Tech. Coll. Certs. Inorganic and Organic Chemistry. Student for four years at the above-mentioned College. Chemist to Messrs. Robert Heath & Low Moor, Ltd. Chief Chemist and Assistant Works Manager of Messrs. Robert Hyde & Son, Ltd. (*Signed by*) H. V. Thompson, F. H. Clews, J. Lloyd Bentley.

DODD, HENRY VINCENT, Rodenhurst, Belmont, Surrey. British. Wholesale Druggist, Chairman and Managing Director of Meggeson & Co., Ltd. Member of the Pharmaceutical Society. (*Signed by*) A. A. Kennedy, F. C. Dyche-Teague, Ernest J. Parry.

DORRINGTON, BERTRAM JOHN FREDERICK, 287, New Cross Road, New Cross, S.E. 14. English. School teacher. B.Sc., London. I did my academic training at King's College, London, 1923–26, and then one year at London Day Training College. Now teaching in London and doing research work in inorganic chemistry at Sir John Cass Institute. (*Signed by*) A. M. Ward, Henry J. S. Sand, E. de Barry Barnett.

DUNHILL, ALFRED HENRY, M.C., White Fryars, Stanmore, Middlesex. British. Director of Chemical and Tobacco Companies. For twelve years been actively engaged in the chemistry of tobacco. Carried out chemical and physical research (in our physical laboratories) on the design of a unique and new plant, now in existence, for the keeping of tobacco and cigars in the environment natural to their growth. Carried out researches on tobacco ash. Been actively engaged on the applicability of wood dyes, and the chemistry of essential oils relative to the flavouring of tobaccos. Scientific Director of Alfred Dunhill, Ltd., London, New York, and Paris. Chairman, Regent Pharmacy, Ltd., Manufacturing and Dispensing Chemists, London. Trained in the Chemical Laboratories of School and Dunhills, Ltd. (*Signed by*) Frank Radcliffe, Francis E. Corringham, Stanley J. Peachey.

ELSON, LESLIE ALDERMON, 27, Truro Road, Wood Green, N. 22. British. Research Chemist. B.Sc. (London), A.I.C. (*Signed by*) C. S. Gibson, J. L. Simonsen, J. D. Johnson.

FEATHER, RICHARD CAMPBELL, 3, Claremont Road, East Twickenham, Middlesex. British. Wholesale Druggist. B.A. (Oxon.), B.Sc. (London). Formerly scholar of University College, Oxford. Director of Messrs. Meggeson & Co., Ltd., Bermondsey, London, Wholesale Druggists. (*Signed by*) E. J. Bowen, H. Hartley, C. N. Hinshelwood, Henry Phillips.

FIFE, JAMES GEORGE, 5, Warwick Road, Wanstead, E. 11. British. B.Sc. (Lond.), A.I.C. Chemist to Climax Manufacturing Co., Ltd. Chemist and Works Manager, Palmyra Manufacturing Co., Ltd. Junior Assistant Chemist Dept. of the War Dept. Chemist, Woolwich. (*Signed by*) J. Kenyon, Henry Phillips, F. Bell.

GARLICK, EDWARD THOMAS MERVYN, Block Chambers, Little Malop Street, Geelong, Victoria, Australia. British. Chartered Civil Engineer specialising in Sewage Treatment. M.Inst.C.E., also Associate of the Bendigo School of Mines (affiliated with the University of Melbourne). Member of the Royal Commission on Sanitation, 1926, Victoria, Australia, and took full charge of all chemical work for the Commission. Designed and constructed Colac Sewerage Works and operating same, Victoria, Australia. Designing and constructing Sewerage Works for Mildura, Shepparton and Echuca, Victoria, Australia. In 1924 and 1928 made tours through England, Germany, America and South Africa with view of keeping in touch with the latest practice in the treatment of sewage. 1906 to 1909 in charge of Chemical Laboratory of the Hampden Cloncurry Copper Mines, North Queensland. "A Graphic Method of Computing Mine Values," *Trans. Aust. Inst. Mining Engineers*, 1910. (*Signed by*) Harri Heap, John Haworth, Wm. E. Speight, Raymond Ross.

GATES-WARREN, EUSTACE LEONARD, The Retreat, 17, Chatsworth Road, West Norwood, S.E. 27. English. Schoolmaster. B.Sc. (Special Chemistry), London. Student, Regent Street Polytechnic, 1924–28. (*Signed by*) H. Lambourne, B. R. Heasman, Albert E. Parkes.

GAUNTLETT, JOHN MILDRED DEANE, 41A, Addison Gardens, W. 14. British. Schoolmaster. B.Sc. (Lond.), 1920; M.Sc. (Lond.), 1924. At present Science Staff, St. Edward's School, Oxford. Formerly Demonstrator, Dept. of Chemistry, King's College, London. *J.C.S.*, 1923, **123**, 1137 (with Arthur Fairbourne), "Synthesis of 4-Hydroxy-1 : 2-dimethyl Anthraquinone." 1925, **127**, 2745 (with Samuel Smiles), "Sulphonation of 4-Chlorophenol." (*Signed by*) Samuel Smiles, A. J. Allmand, J. M. Gulland, W. H. Perkin.

GEDYE, GORDON RUPERT, Trinity Hall, Cambridge. British. Student. B.A. (Camb.), 1928. Scholar of Trinity Hall. Research student in physical

chemistry at Cambridge University. (*Signed by*) Eric K. Rideal, R. G. W. Norrish, Gwyn Williams.

GUPTA, RAM CHARAN, Maharana's College, Udaipur, Rajputana, India. Hindu. Professor of Chemistry. M.Sc. (Lucknow). More than five years' teaching experience. (*Signed by*) Hari Prasad, N. R. Dhar, K. P. Chatterjee.

HARDWICK, PERCY JOHN, 11, Balmuir Gardens, Upper Richmond Road, Putney, S.W. 15. British. Temporary Assistant Chemist in the Government Laboratory, Strand. B.Sc. (Lond., External), University College, Exeter. Student at University College, Exeter, 1924–28. Obtained Honours (1st Class) in London B.Sc. (External) Examination in June 1928. Chemistry as special subject, mathematics subsidiary. Elected A.I.C. Oct. 1928. (*Signed by*) R. Robertson, Geo. Stubbs, J. J. Fox.

HEMMING, FREDERICK, 15, Nightingale Road, Southsea, Portsmouth, British. Head of Pharmacy Department. Senior Lecturer (Pharmacy and Pharmaceutical Chemistry), 1919–27. Head of Department of Pharmacy, Municipal College, Portsmouth, since 1927. (*Signed by*) Walter H. Watson, J. Bernard Coleman, Henry B. Mackie.

HUGHES, HENRY MALCOLM FORREST, 37, High Street, Smethwick, Staffordshire. English. Works Chemist. Student at Birmingham Municipal Technical College and sitting for London B.Sc. in June next. Have been for seven years Chemist with Messrs. J. and E. Sturge, Birmingham. (*Signed by*) J. Newton Friend, J. Cooper Duff, V. S. George.

JONES, ELFED THOMAS, 149, Fillebrook Road, Leytonstone. British. Research Student at East London College. First Class Honours in Chemistry in B.Sc. (Lond.), 1928. Physics subsidiary to be taken in 1929. At present doing research in organic chemistry for M.Sc. degree. (*Signed by*) J. R. Partington, A. Robertson, D. C. Jones.

JONES, SIDNEY HERBERT, 85, St. George's Road, S.W. 1. English. Analytical Chemistry. Employed as an Analytical Chemist at G.W.R. Laboratories, Swindon. Studied analytical and general chemistry at the College, Swindon, 1917–25. (*Signed by*) A. M. Low, T. C. Davison, W. Jobson.

KERSHAW, ARNOLD, 127, Northgate, Huddersfield, Yorkshire. English. Research student. B.Sc. (Lond., External), 1st Class Hons., 1926. Research student from mid-summer 1926 to the present time at the Technical College, Huddersfield. [With Dr. H. H. Hodgson], "Some Reactions of 3-Chloro-2-amino-anisole," *J.C.S.*, 1928, 191; "The 3-Halogeno-2-, -4-, and -6-Aminophenols," *ibid.*, 1928, 2703. (*Signed by*) Herbert Henry Hodgson, James Bruce, Kenneth Ernest Cooper.

LESCHER, THOMAS EDWARD, O.B.E., 16, Oxford Road, Birkdale, Lancs. (56, Hanover Street, Liverpool). British. Managing Director, Evans Sons, Lescher & Webb, Ltd., Liverpool and London, Manufacturers of Fine Chemicals and Wholesale Druggists. Member and Honorary Auditor of the Pharmaceutical Society. (*Signed by*) Jocelyn Thorpe, C. S. Gibson, Francis H. Carr.

LESSLIE, MARY STEPHEN, Bedford College, Regent's Park, N.W. 1. British. University Demonstrator. M.A., B.Sc., Ph.D. (St. Andrews). [With Prof. A. McKenzie, F.R.S.], "Über Carbonethoxy-Derivate von Oxy-säuren," *Ber.*, 1928, **61**, 153. (*Signed by*) E. E. Turner, Florence R. Shaw, James F. Spencer.

MAILE, CHARLES H., 3, Aubrey Walk, Kensington, W. 8. British. Chemical Engineer. I have had wide experience as a chemical engineer, chiefly in the construction of chemical and laboratory plants. For ten years a Director of The Western Tablet Co., Manufacturing Chemists, London, being in sole charge of the manufacturing side of the business. At present

engaged with Menley & James, Ltd., London, and making a study of colloidal chemistry. Desirous of becoming a Fellow of the Chemical Society so that I may come into closer contact with the progress of scientific chemistry and receive the publications of the Society. (*Signed by*) F. W. Crossley-Holland, H. R. C. Scott, F. H. Webb, J. M. Edwards.

Mandour, Abbas Mousa Mousa, 24, Hill Top Mount, Harehills, Leeds. Egyptian. Student for B.Sc. Hons. of Chemistry in Leeds University (final year). Egyptian Diploma of a Pharmaceutical Chemist. Two years' work as a Dispensing Chemist in the Egyptian Government hospitals. (*Signed by*) C. K. Ingold, J. W. Baker, W. A. Wightman.

Mee, Arthur James, 62, Rectory Grove, Woolwich, S.E. 18. British. Schoolmaster. B.A. (Camb.), 1927, 2nd Class Hons., Part II Natural Sciences Tripos (Chemistry); B.Sc. (Lond.), 1927, 1st Class Hons., special exam. Chemistry. Senior Chemistry Master, Newport School, Essex. (*Signed by*) W. J. Pope, W. H. Mills, Eric K. Rideal, R. G. W. Norrish.

Napp, Hermy Richard, 3 & 4, Clements Inn, W.C. 2. Swiss. Chemical Merchant. Interested in Chemistry. (*Signed by*) L. R. B. Pearce, S. I. Levy, F. B. Windle.

Parkes, George David, Keble College, Oxford. British. Tutor and Lecturer of Keble College. B.Sc., M.A. (with 1st Class Honours in Chemistry), D.Phil. (Oxford). Demonstrator at the Queen's College Laboratory, Oxford, since 1922. Tutor and Lecturer at Keble College, Oxford, since 1924. *J.C.S.*, **1923**, **123**, 669; 1924, **125**, 465; 1924, **125**, 1980; 1925, **127**, 1307; 1926, **129**, 113. (*Signed by*) F. D. Chattaway, E. Hope, W. H. Perkin.

Parsons, Leslie George Brutt, 73, Lynton Avenue, Ealing, W. 13. English. Organic Research at the Royal College of Science. A.R.C.S., B.Sc. (Special). (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, R. P. Linstead.

Patel, Chaturbhai Shankarbhai, 2, Hyde Terrace, Leeds. Indian. B.A. (Hons.), M.Sc. (Bombay), University of Bombay. Working as a Lecturer in Chem. Technology at Kala Bhavan Technical Institute, Baroda (India) for eight years. Published a paper in *J. Ind. Chem. Soc.*, Vol. I, with K. G. Naik. (*Signed by*) C. K. Ingold, H. Burton, J. W. Baker.

Phillips, Gerald Rhys, B.Sc., F.R.G.S., 6, Wimborne Terrace, Bideford, N. Devon. British. Assistant Master, Bideford Grammar School. B.Sc. (Wales), U.C.W., Aberystwyth. Teaching experience, Sept. 1924 to present date. April 1928, Science Master at Manselton Central School, Swansea; 1926–28, Lecturer in Advanced Science, Glamorgan C.C. Evening Technical Classes; Jan. 1929, Bideford Grammar School, N. Devon. (*Signed by*) T. Campbell James, D. M. Williams, L. J. Hudleston, C. R. Bury.

Plant, Millicent Mary Theodosia, 55, Willenhall Road, Bilston, Staffs. British. Research Student in Chemistry. B.Sc. (Birmingham), 1st Class Honours in Chemistry. (*Signed by*) W. N. Haworth, E. L. Hirst, Wm. Wardlaw.

Powdrill, John, 20, Catlow Hall Street, Oswaldtwistle, Accrington, Lancs. British. Chief Chemist and Junior Assistant Gas Engineer of Accrington District Gas and Water Board. Final exams. Burnley Technical College, Organic Theoretical and Practical Chemistry, 1st Class. Institution of Gas Engineers Higher Grade Certificate. (*Signed by*) Samuel Hill, James Booth, O. P. Cronshaw, J. W. Bell.

Qvist, Walter Gunnar Theodor, Åbo Academy, Åbo, Finland. Finnish. Professor of General Chemical Technology, Åbo Academy. Engineer with diploma (Technical University at Helsingfors). Doctor of Philosophy (University of Helsingfors). Publications in *Liebigs Annalen der Chemie*, Bd. 417;

Zeitschrift für analytische Chemie, Bds. 65 and 68; *Berichte der Deutschen Chemischen Gesellschaft*, Bd. 60; *Biochemische Zeitschrift*, Bd. 197; *Der Papierfabrikant*, Bd. 17; *Acta Academiae Åboensis, Mathematica und Physica*, Vols. III–V. (*Signed by*) G. J. Östling, Walter Wahl, Gustav Komppa.

RICARD, ELOI, Distilleries des Deux Sèvres à Melle (Deux-Sèvres). Français. Administrateur-délégué de la Société Anonyme des Distilleries des Deux-Sèvres. Ingénieur des Arts et Métiers. Promoteurs de fabrications industrielles nouvelles, telles que fabrication acétone et alcool butylique par fermentation. "Dishydratation de l'alcool pour obtention d'alcool anhydre." "Concentration des acides gros à l'état anhydre." (*Signed by*) J. Vargas Eyre, H. B. Hutchinson, H. A. Auden.

ROBERTS, DAVID, 37, Water Street, Llanllechid, Bangor. British. Research Student. B.Sc., 1st Class Honours in Chemistry, University of Wales. University student, University of Wales. (*Signed by*) Kennedy Orton, F. G. Soper, A. E. Bradfield.

ROWE, JAMES WALKER, "Malton," Holmesdale Road, Orpington, Kent. British. Chemist. Chemist with Messrs. British Cellofoils, Ltd., for three years. A thesis on "The Effect on Cellulose Fibres of Treatment in the Papermakers' Beater," *Proceedings of the Technical Section of the Paper-makers' Association of Great Britain and Ireland*, 1927, VIII, i, 177. (*Signed by*) S. Barratt, C. W. Bonniksen, H. Terrey.

SEARLE, FREDERICK WILLIAM, "Gable Cottage," 152, Downton Avenue, Streatham Hill, S.W. 2. British. Pharmacist at St. Bartholomew's Hospital. Member of the Pharmaceutical Society. Teacher of Practical Pharmacy. Engaged in the examination of chemicals and drugs at St. Bartholomew's Hospital. (*Signed by*) Francis H. Carr, Charles Alex. Hill, W. H. Hurtley.

SLAUGHTER, SYDNEY WALTER, 90, Westcliff Park Drive, Westcliff, Southend-on-Sea, Essex. British. Technical Assistant to Chartered Patent Agent. B.Sc. (Lond.). My reason for desiring admission into the Society is that I wish, as a technical assistant, to keep in touch with progress in chemistry. (*Signed by*) S. Sugden, Henry Wilkins, W. W. Jones.

SPONG, ALFRED HERBERT, Westminster College, 130, Horseferry Road, S.W. 1. British. Lecturer in Chemistry. B.Sc. (Lond.), 1923. Teacher of Chemistry, 1925–27; Research Student at University College, London, 1927–28; Lecturer at Westminster College from Oct. 1928. (*Signed by*) F. G. Donnan, P. C. Austin, H. Terrey.

STEDMAN, EDGAR, 12, Woodburn Terrace, Edinburgh. British. Lecturer, Dept. of Medical Chemistry, Edinburgh University. D.Sc. (Lond.), Ph.D. (Edin.). *J.C.S.*, "Physostigmine"; *Biochem. J.*, "Haemocyanin and Synthetic Miotics." *J.C.S.*, 1921, **119**, 892; 1923, **123**, 758; 1924, **125**, 1373; 1925, **127**, 247; 1927, 1902. (*Signed by*) George Barger, Ellen Stedman, W. O. Kermack.

TEECE, ETHEL GERTRUDE, Grafton, Moxley Road, Darlaston, S. Staffs. British. Research Student in Chemistry. B.Sc. (Birmingham), 1st Class Honours in Chemistry. (*Signed by*) W. N. Haworth, E. L. Hirst, Wm. Wardlaw.

THOMAS, HARRY AUGUSTUS, 42, Cole Valley Road, Hall Green, Birmingham. British. Research Student in Chemistry. B.Sc. Hons. (1st Class Honours in Chemistry), Birmingham University, July 1928. Student at Birmingham University since Oct. 1925. Vacation Course at B.D.C., Blackley, Manchester, Sept. 1927. (*Signed by*) W. N. Haworth, E. L. Hirst, H. A. Hampton.

THORNE, RICHARD STANLEY WREY, 51, Newlyn Road, Tottenham, N. 17.

English. Student (Research). A.R.C.S., B.Sc. (Royal College of Science, London). For the past two years a student of chemistry at the Royal College of Science and now a research student. Also a Government Exhibitioner. (*Signed by*) E. H. Farmer, M. A. Whiteley, Jocelyn Thorpe.

VERNON, WILLIAM HAROLD JUGGINS, 6, High Street, Wimbledon, S.W. 19. British. Research Chemist. D.Sc. (Lond.), Ph.D. (Lond.), B.Sc. (Birm.), F.I.C. Author of First and Second Reports to the Atmospheric Corrosion Research Committee, *Trans. Faraday Soc.*, 1924, **19**, 839; 1927, **23**, 113. "Formation of Protective Oxide Films on Copper and Brass by Exposure to Air at Various Temperatures," *J.C.S.*, 1926, **129**, 2273. (*Signed by*) G. T. Morgan, Guy D. Bengough, J. M. Stuart.

WALLS, LESLIE PERCY, 167, Hook Road, Epsom, Surrey. British. Research Chemist. B.A. (Camb.), B.Sc. (Lond.). Research work at Chemical Research Laboratory, Teddington. (*Signed by*) G. T. Morgan, F. H. Burstall, J. W. Cook, J. E. Mitchell.

WARD, DENIS, "Clevedon," Wheatley Avenue, Ben Rhydding, Ilkley. British. Research Student in Organic Chemistry. B.Sc. (Leeds). (*Signed by*) C. K. Ingold, W. A. Wightman, E. Rothstein.

WILKINS, ERNEST THOMAS, 54, Pepys Road, New Cross, S.E. 14. British. Chemist. M.Sc. (London). Ten years' experience in the research laboratories of the South Metropolitan Gas Co. At present with Dept. of Scientific and Industrial Research (Fuel Research Station). (*Signed by*) A. R. Pearson, T. J. Drakeley, H. J. S. King, D. H. Richardson.

WILKINS, FREDERICK JAMES, 4, Humberstone Road, Cambridge. British. Research Student. M.Sc. (London). Student at Cardiff Technical College, 1921–27. B.Sc. (London), 1924; M.Sc. (London), 1927. Research Student, Christ's College, Cambridge, 1927 to date. (Part author) *J.C.S.*, 1926, **125**, 1219. (*Signed by*) T. M. Lowry, Eric K. Rideal, Gwyn Williams.

WILLIAMS, JOHN NORMAN, 58, Alfriston Road, Clapham Common, S.W. 11. British. Technical Director. A.M.I.Mech.E. (by thesis). Member of the Institute of Fuel. Lecturer in senior class on Heat Engines and Applied Mechanics at Westminster Technical Institute. (*Signed by*) Fred J. Eaton, A. Bramley, C. Bateman, J. E. Hackford.

WOOLVIN, CLARENCE SYDNEY, 35, Wyley Road, Radford, Coventry. British. Research Worker in Chemistry. B.Sc. Hons. (1st Class), Birmingham. (*Signed by*) W. N. Haworth, E. L. Hirst, John V. Loach.

WRIGHT, WINIFRED MARY, Shaftesbury House, Shaftesbury Road, Cambridge. British. Research in Clinical Laboratory of Addenbrooke's Hospital, Cambridge. M.A., Ph.D. (Cambridge). Yarrow Research Student, Girton College, 1925–27. Four papers on "Oxidations on Charcoal" in *J.C.S.* Two papers on "Decomposition of Hydrogen Peroxide" in *Zeit. f. Elektrochemie* and *Trans. Faraday Soc.* Rideal and Wright, *J.C.S.*, 1925, **127**, 1347; 1926, 1813, 3182. Wright, *ibid.*, 1927, 2323. (*Signed by*) Eric K. Rideal, Gwyn Williams, A. F. H. Ward.

WUORINEN, OLLI VILJO ANTON, 1, Westfield Road, Edgbaston, Birmingham. Finnish. Research Chemist. M.A. (University of Helsinki-Finnland) for thesis and research work in chemistry. Assistant for practical organic chemistry (for session 1927–28) at the University of Helsinki. Now engaged in research work in the Chemistry Department of the University of Birmingham. Publications: "Kemialtinen Kokeilukirja," published by Otava, Ltd.; "Kasvibiologisia Kokeita," published by Otava, Ltd.; Translations of three German and two Swedish chemistry books into Finnish. (*Signed by*) W. N. Haworth, E. L. Hirst, Wm. Wardlaw.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

ADKINS, HOMER, 2103, Rowley Avenue, Madison, Wisconsin, U.S.A. American. Professor of Organic Chemistry, University of Wisconsin. B.Sc. Denison), M.A. and Ph.D. (Ohio State University). Past Chairman and Councillor of Wisconsin Section of the American Chemical Society. (*Signed by*) Marston Taylor Bogert, H. T. Clarke.

BIGELOW, HAROLD EUGENE, Sackville, New Brunswick, Canada. Canadian. Professor of Chemistry. B.A. (Mount Allison), A.B., A.M., Ph.D. (Harvard). *Berichte der Deut. Chem. Gesellschaft*, XXXXII, (1909), 1868 "Über 1 : 3 : 5-Tri-iod-2-brom-4 : 6-dinitrobenzol," *Amer. Chem. Journal*, XLVI, 1911, 549, "1 : 3 : 5-Tri-iod-2-brom-4 : 6-dinitrobenzene and some of its Derivatives." Fellow and Charter Member, Canadian Institute of Chemistry. Dean, McClelan School of Applied Science, Mount Allison, Ont. (*Signed by*) C. S. Gibson.

CAMBI, LIVIO, Milano (133), Viale Romagna 33. Italy. Professor of Industrial Chemistry in the Royal University of Milan. D.Sc. (Bologna). Publications: *R.A.L. Gaz. ch. It. Girn. chim. appl. It. Ber.*, from 1907 to 1928. (*Signed by*) G. Bruni, G. R. Levi.

COGHILL, ROBERT DOUGLAS, George Street, Dunedin, New Zealand. British subject. Technical Chemist. Educated privately, later at King Edward Technical College (1st Class Certificate), and at Otago University; studies interrupted by war. Research into matters affecting the fur-dyeing and woollen industries with particular success in the branding and fibre contamination (in wool) troubles. Investigations into uses for phormium tenax fibre has solved problems for producing sacking and spinnable fibre from this (references enclosed). Practical experience as a technical and manufacturing chemist. Member of the Society of Chemical Industry. (*Signed by*) R. Gardner.

KURUP, POKIARATH BALARAMA, Calicut, India. Indian. Chemist. The Calicut Soaps and Candles Co., Ltd., Calicut. Advising Chemist, The United Chemical Works, Calicut. Bachelor of Arts of the Madras University with chemistry as main subject. Lecturer in Chemistry, Zamorin's College, Calicut. (*Signed by*) V. M. Mascarenhas.

PASCUAL, JOSÉ, Universidad, Sevilla (España). España. Professor of Organic Chemistry. (*Signed by*) Jocelyn Thorpe.

VOGT, CLARENCE CHARLES, Research Division, Armstrong Cork Co., Lancaster, Pa. American. Research Chemist. A.B., Wooster College, Wooster, Ohio; A.M., Ohio State University; Ph.D., Ohio State University. Professor of Chemistry, University of Pittsburgh, 1909–12. Fellow Mellon Institute, 1912–18. Chemist, U.S. Bureau Mines and Captain C.W.S., U.S. Army, 1918 (June–Dec.). Fellow, Mellon Institute, 1918–26. Research Chemist, Armstrong Cork Co., 1926 to date. Member Amer. Chem. Soc. Fellow A.A.A.S. (*Signed by*) Jocelyn Thorpe.

WAGNER, ALFRED, Pesterzsebet, Hungary, P.O. Box 32 (from Jan. 1st, 1929, Leipzig-Gohlis, Berggartenstrasse 8, I.). German. Chemist. High School. "Essential Oils"; "Fabrication of Alcohol"; "Synthetic Perfumes and Derivatives"; Knoll-Wagner, "Synthetic and Isolated Perfumes." Editor of *Die Riechstoffindustrie*. "Yearbook of Pharmacy," 1927, 260. (*Signed by*) Jocelyn Thorpe.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

(a) *Presented by the Society of Chemical Industry.*

AMERICAN ASSOCIATION OF CEREAL CHEMISTS. Cereal Chemistry. Vol. III, etc. St. Paul, Minn. 1926 +. (*Reference.*)

AMERICAN PHARMACEUTICAL ASSOCIATION. Journal. Vol. XVI, etc. Easton, Pa. 1927 +. (*Reference.*)

ANNALES DE CHIMIE ANALYTIQUE ET DE CHIMIE APPLIQUÉE. Series 2. Vol. IV, etc. Paris 1922 +. (*For circulation.*)

ANNALES DES FALSIFICATIONS ET DES FRAUDES. Year XVII, etc. Paris 1924 +. (*For circulation.*)

ARCHIV DER PHARMAZIE UND BERICHTE DER DEUTSCHEN PHARMAZEUTISCHEN GESELLSCHAFT. 1924, etc. Berlin 1924 +. (*For circulation.*)

BRENNSTOFF-CHEMIE. Zeitschrift für Chemie und chemische Technologie der Brennstoffe und ihrer Nebenprodukte. Vol. V, etc. Essen 1924 +. (*Reference.*)

BREWERS' JOURNAL, THE, and Hop and Malt Trades' Review. Vol. LXI, etc. London 1928 +. (*Reference.*)

CARLSBERG, LABORATOIRE DE. Comptes-Rendus des Travaux. Vol. XIV, etc. Copenhague 1919 +. (*For circulation.*) [Vols. XIV and XVI incomplete.]

CHEMISCHE UMSCHAU auf dem Gebiete der Fette, Öle, Wachse und Harze. Year XXXI, etc. Stuttgart 1924 +. (*For circulation.*)

COLLEGIUM. No. 633, etc. Darmstadt 1923 +. (*Reference.*)

FARADAY SOCIETY. Transactions. Vols. I–VII, XV–XVII, XXI, etc. London 1905–11, 1919–22, 1925 +. (*For circulation.*)

FARBEN-ZEITUNG. Fachblatt für die Farben- und Lack-Industrie. Year XXX, etc. Berlin 1926 +. (*Reference.*)

FUEL ECONOMIST, THE. An engineering journal for the power producer and fuel technologist. Vol. I, etc. London 1925 +. (*Reference.*) [Vol. I incomplete.]

NATURWISSENSCHAFTEN, Die. Wochenschrift für die Fortschritte der reinen und der angewandten Naturwissenschaften. Year XVI, etc. Berlin 1928 +. (*Reference.*)

PERFUMERY AND ESSENTIAL OIL RECORD. Vol. XV, etc. London 1924 +. (*Reference.*)

PETROLEUM. Zeitschrift für die gesamten Interessen der Mineralöl-Industrie und des Mineralöl-Handels. Vol. XXI, etc. Berlin 1925 +. (*Reference.*)

SOCIETY OF DYERS AND COLOURISTS. Journal. Vol. XLI, etc. Bradford 1925 +. (*For circulation.*)

ZELLSTOFF UND PAPIER. Chemisch-technische Monatsschrift für die Zellstoff herstellenden und verarbeitenden Industrien. Year II, etc. Berlin 1922 +. (*Reference.*)

ZYMOLOGICA, CHIMICA DEI COLLOIDI E DEGLI ZUCCHERI. Year II, etc. Bologna 1927 +. (*Reference.*)

(b) *Miscellaneous donations.*

ASAHINA [YASUHIKO], NAKAO, —— and TSUKAMOTO [TAKEO]. Schmelzpunkttabelle der organischen Verbindungen. Ein Hilfsbuch für Pharmazeuten, Chemiker und Biologen. Tokyo 1928. pp. viii + 220 + 46. (*Reference.*) $5.

From the Publisher: Mr. Nankodo.

BAILEY, DOROTHY, and BAILEY, KENNETH CLAUDE. An etymological dictionary of chemistry and mineralogy. London 1929. pp. viii + 308. (*Reference.*) 25*s.* net.

From the Publishers: Messrs. Edward Arnold & Co.

DUBRISAY, RENÉ. Leçons sur la chimie générale. Paris 1928. pp. vi + 246. ill. 45 *fr.* (*Recd.* 31/12/28.)

From the Publishers: MM. Gauthier-Villars et Cie.

FARADAY SOCIETY. Cohesion and related problems: a general discussion. London 1928. pp. iv + [128]. ill. 10*s.* 6*d.* net. (*Recd.* 22/12/28.) From Mr. N. K. Adam.

GIBBS, JOSIAH WILLARD. Collected works. 2 vols. New York 1928. pp. xxviii + 434, xviii + 208 + vi + 284. ill. 30*s.* net. (*Recd.* 15/1/29.) From Dr. T. Slater Price.

HAWORTH, WALTER NORMAN. The constitution of sugars. London 1929. pp. viii + 100. ill. 8*s.* 6*d.* net. (*Recd.* 11/1/29.)

From the Author.

PARTINGTON, JAMES RIDDICK, and TWEEDY, S. K. Calculations in physical chemistry. London 1928. pp. viii + 152. ill. 7*s.* 6*d.* net. (*Recd.* 9/1/29.) From Professor J. R. Partington.

REDGROVE, HERBERT STANLEY. Scent and all about it: a popular account of the science and art of perfumery. London 1928. pp. viii + 100. 3*s.* 6*d.* net. (*Recd.* 11/1/29.)

From the Publishers: Messrs. William Heinemann.

SPIERS, HENRY MICHAEL. [Editor.] Technical data on fuel. World Power Conference, London 1928. pp. xii + 200. ill. (*Reference.*) 10*s.* 6*d.* net. From the Editor.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. VI. Part viii. Berlin 1928. pp. 1921 to 2160. *M.* 10.

From the Publishers: Herren Urban & Schwarzenberg.

WATERSTON, JOHN JAMES. Collected scientific papers. Edited, with a biography, by JOHN SCOTT HALDANE. Edinburgh 1928. pp. lxviii + 709. ill. 25*s*. net. (*Recd.* 19/12/28.)
From the Publishers: Messrs. Oliver & Boyd.

II. *By purchase.*

BAUER, MAX. Edelsteinkunde. 3rd edition. By KARL SCHLOSSMACHER. Vol. I, etc. Leipzig 1928 +. ill. (*Reference.*)

BILTZ, HEINRICH, and BILTZ, WILHELM. Laboratory methods of inorganic chemistry. Authorized translation by WILLIAM THOMAS HALL and ARTHUR ALPHONZO BLANCHARD. 2nd edition. New York 1928. pp. xvi + [271]. ill. 12*s*. 6*d*. net. (*Recd.* 20/12/28.)

BLOCK, WALTER. Messen und Wägen. Ein Lehr- und Handbuch insbesondere für Chemiker. Mit einer Einleitung: Die historische Entwicklung der Messkunde und des Mass- und Gewichtswesens. By FRITZ PLATO. Leipzig 1928. (Chemische Technologie in Einzeldarstellungen.) pp. viii + 339. ill. *M*. 28. (*Recd.* 15/1/29.)

BURN, JOSHUA HAROLD. Methods of biological assay. London 1928. pp. xviii + 126. ill. 8*s*. 6*d*. net. (*Recd.* 20/12/28.)

BUTLER, JOHN ALFRED VALENTINE. The foundations of chemical thermodynamics. Part I. London 1928. pp. xii + 207. ill. 6*s*. net. (*Recd.* 20/12/28.)

CLARK, WILLIAM MANSFIELD. The determination of hydrogen ions. 3rd edition. [Baltimore] 1928. pp. xvi + 717. ill. 30*s*. net. (*Recd.* 20/12/28.)

CRENNELL, J. T., and LEA, FREDERICK MEASHAM. Alkaline accumulators. London 1928. pp. x + 132. ill. 10*s*. 6*d*. net. (*Recd.* 17/1/29.)

CROSS, ROY. A handbook of petroleum, asphalt and natural gas. Physical and chemical properties, specifications, methods of analysis, economics and statistics, refining processes, patents, tables and bibliography. Bulletin No. 25, Kansas City Testing Laboratory. Kansas City, Mo. 1928. pp. 832. ill. 35*s*. net. (*Recd.* 17/1/29.)

CUMMING, ALEXANDER CHARLES, and KAY, SYDNEY ALEXANDER. A text-book of quantitative chemical analysis. 5th edition. London 1928. pp. xvi + 440. ill. 15*s*. net. (*Recd.* 22/12/28.)

ELLMS, JOSEPH W. Water purification. 2nd edition. New York 1928. pp. xii + 594. ill. 35*s*. net. (*Recd.* 17/1/29.)

EYNON, LEWIS, and LANE, JOSEPH HENRY. Starch: its chemistry, technology and uses. Cambridge 1928. pp. viii + 256. ill. 12*s*. 6*d*. net. (*Recd.* 17/1/29.)

TECHNOLOGY

PROCEEDINGS
OF THE
CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, February 7th, 1929, at 8 p.m., SIR ROBERT ROBERTSON, K.B.E., D.Sc., F.R.S., Vice-President, in the Chair.

Reference was made to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
William J. Bowis	July 5th, 1906.	Jan. 25th, 1929.
Henry J. H. Fenton	Dec. 5th, 1878.	Jan. 13th, 1929.
Charles A. Kelly	Feb. 18th, 1926.	Jan. 12th, 1929.

Certificates were read for the first time in favour of:

John Norman Aldington, B.Sc., 46, Long Lane, Ashton-on-Ribble, Preston.
Hla Baw, B.Sc., 3, Tylney Road, Sheffield.
Jack Bloom, B.Sc., 38, Albert Grove, Leeds.
David Lloyd Emrys Evans, 10, Victoria Square, Aberdare.
James Galloway, 30, Buccleuch Street, Garnethill, Glasgow.
Constance Higginbottom, M.Sc., Quarry Bank, New Mills, Stockport.
John Lloyd Jones, B.A., B.Sc., 37A, Hartham Road, N. 7.
Dadabhoy Maneckshaw Karkhanavala, Tardeo Terraces, Tardeo Road, Bombay.
John Craven Laycock, The Spinney, Market Lavington, Wilts.
Margaret Augusta Leishman, B.A., B.Sc., Wyberton, Park Hill Road, Croydon.
William Rowe Littlejohn, B.Sc., Ronda, Evesham Road North, Reigate.
William George Moffitt, B.Sc., Bridge House, Carleton Road, Pontefract.
Birendra Lal Nandi, M.Sc., Prome Hall, University Estate, Rangoon.
Stuart Wortley Pennycuick, D.Sc., The University, Adelaide.
Thomas Moore Ridley, 18, Scotland Road, Carlisle.
Frank Albert Royle, M.Sc., Ph.D., Research Department, The Graesser Monsanto Chemical Works, Ltd., Ruabon.
Leopold Ruzicka, Prof., Dr. Ing., Organic Chemical Laboratory, Catharijnesingel 59, Utrecht.
Masanobu Terasaka, Tokushima Technical College, Japan.
Leonard Noel Tyrrell, 6, Providence Road, Yiewsley, Middlesex.

The following papers were read :

"Indian turpentine from *Pinus longifolia*, Roxb. Part V. The oxidation of *d*-Δ^3-carene with Beckmann's chromic acid mixture." By C. S. GIBSON and J. L. SIMONSEN.

"A new method for preparing substituted diphenylamines." By A. W. CHAPMAN.

"Compounds of the tryparsamide type. Part I. Resolution of *N*-phenylalanine-4-arsinic acid and of its amide." By C. S. GIBSON, J. D. A. JOHNSON, and B. LEVIN.

"10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part VII. The synthesis of the 1-methyl- and of the 3-methyl-homologues." By C. S. GIBSON and J. D. A. JOHNSON.

Ordinary Scientific Meeting, Thursday, February 21st, 1929, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Hugh B. Collins	Feb. 18th, 1892.	Feb. 12th, 1929.
George W. Gray	Feb. 20th, 1913.	Feb. 12th, 1929.

Certificates were read for the first time in favour of :

Rupert Woolby Brooke, 19, Gloucester Road, South Kensington, S.W. 7.
Francis Alan Butt, Pentire, St. Mary's Hill, Paignton.
Robert Neil Cunningham, B.Sc., 62, Blenheim Gardens, N.W. 2.
Andrew Home-Morton, M.Inst.C.E., M.I.Mech.E., M.I.E.E., The "Roche" Laboratories, 51, Bowes Road, N. 13.
Andrew Kent, M.A., B.Sc., 207, Kenmure Street, Glasgow.
Sokichi Nakanishi, Pharmaceutical Institute, Imperial University, Tokyo.
Eiji Ochiai, Pharmaceutical Institute, Imperial University, Tokyo.
Charles Gordon Smith, M.Sc., Craigside, Higher Bebington, Cheshire.
Andrew Theodore Sumner, B.Sc., Melatti, Hurst Road, East Molesey.
Bernard Thomas Dudley Sully, B.Sc., A.R.C.S., A.I.C., 10, Old Town, Clapham Common, S.W. 4.

The following certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) :

Lawrence Harvey Cook, Prof., A.M., Box 607, Menlo Park, Cal., U.S.A.
Michael Angelo O'Callaghan, Florida 734, Buenos Aires, Argentine.

Dr. H. J. Emeléus and Dr. C. D. Langford were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :

Osman Achmatowicz, D.Chem.
Homer Adkins, M.A., B.Sc., Ph.D.
Harry James Barber, B.Sc., Ph.D.
Harold Eugene Bigelow, B.A., A.M., Ph.D.
Sidney Harold Dalton Cakebread, B.Sc.
Livio Cambi, D.Sc.
Charles Mills Cawley, A.R.C.S., B.Sc.
Nani Gopal Chakravarti, M.Sc.
Sydney William Challinor, B.Sc.
Robert Douglas Coghill.
Frederick Hurn Constable, M.A., D.Sc., Ph.D., F.I.C.
Charles Gaspard Daubney, M.Sc., A.I.C.
Ranchhodji Dajibhai Desai, B.A., M.Sc.
Amarendra Nath Dey, M.Sc.
George Discombe.
Kenneth Docksey.
Henry Vincent Dodd.
Bertram John Frederick Dorrington, B.Sc.
Alfred Henry Dunhill, M.C.
Leslie Aldermon Elson, B.Sc., A.I.C.
Richard Campbell Feather, B.A., B.Sc.
James George Fife, B.Sc., A.I.C.
Edward Thomas Mervyn Garlick, M.Inst.C.E.
Eustace Leonard Gates-Warren, B.Sc.
John Mildred Deane Gauntlett, M.Sc.
Gordon Rupert Gedye, B.A.
Ram Charan Gupta, M.Sc.
Percy John Hardwick, B.Sc.
Frederick Hemming.
Henry Malcolm Forrest Hughes.
Elfed Thomas Jones, B.Sc.
Sidney Herbert Jones.
Arnold Kershaw, B.Sc.
Pokiarath Balarama Kurup, B.A.
Thomas Edward Lescher, O.B.E.
Mary Stephen Leslie, M.A., B.Sc., Ph.D.
Charles H. Maile.
Abbas Mousa Mousa Mandour.
Arthur James Mee, B.A., B.Sc.
Hermy Richard Napp.
George David Parkes, M.A., B.Sc., D.Ph.
Leslie George Brutt Parsons, B.Sc., A.R.C.S.
José Pascual.
Chaturbhai Shankarbhai Patel, B.A., M.Sc.
Gerald Rhys Phillips, B.Sc.
Millicent Mary Theodosia Plant, B.Sc.
John Powdrill.
Walter Gunnar Theodor Qvist, D.Phil.
Eloi Ricard.
David Roberts, B.Sc.
James Walker Rowe.
Frederick William Searle.
Sydney Walter Slaughter, B.Sc.
Alfred Herbert Spong, B.Sc.
Edgar Stedman, D.Sc., Ph.D.
Ethel Gertrude Teece, B.Sc.
Harry Augustus Thomas, B.Sc.
Richard Stanley Wrey Thorne, B.Sc., A.R.C.S.
William Harold Juggins Vernon, D.Sc., Ph.D., F.I.C.
Clarence Charles Vogt, A.M., Ph.D.
Leslie Percy Walls, B.A., B.Sc.
Alfred Wagner.
Denis Ward, B.Sc.
Ernest Thomas Wilkins, M.Sc.
Frederick James Wilkins, M.Sc.
John Norman Williams, A.M.I.Mech.E.
Clarence Sydney Woolvin, B.Sc.
Winifred Mary Wright, M.A., Ph.D.
Olli Viljo Anton Wuorinen, M.A.

The following papers were read :

"Photochemical equilibrium in nitrogen peroxide. Part II. The dependence of quantum efficiency on wave-length." By R. G. W. NORRISH.

"Photochemical equilibrium in nitrogen peroxide. Part III. A comparison of the thermal, photochemical, and electrical decompositions, and a general theory of the change." By R. G. W. NORRISH.

"Photochemical equilibrium in nitrogen peroxide. Part IV. Fluorescence and photochemical activity." By R. G. W. NORRISH.

"The reactions of nitrosulphonyl chlorides. Part I. The reaction of hydrazine hydrate with *o*-nitrosulphonyl chlorides." By A. T. DANN and W. DAVIES.

THE T. W. RICHARDS MEMORIAL LECTURE.

The T. W. Richards Memorial Lecture will be delivered by Sir Harold Hartley, M.C., C.B.E., F.R.S., on Thursday, April 25th, 1929, at 5.30 p.m., in the Meeting Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1.

THE 88th ANNUAL GENERAL MEETING AND ANNIVERSARY DINNER.

The 88th Annual General Meeting, and the Anniversary Dinner of the Society, will take place in Leeds on Thursday, March 21st, 1929.

The Annual General Meeting will be held in the University, the business portion of the meeting (open to Fellows only) taking place in the Chemistry Lecture Theatre at 3.15 p.m. The Presidential Address, entitled "Co-operation in Science and Industry," will be delivered by Professor J. F. Thorpe, C.B.E., D.Sc., F.R.S., in the Great Hall of the University at 4.30 p.m. Tea will be served at 4 p.m.

The Anniversary Dinner will take place the same evening at 7 for 7.15 p.m., in the Town Hall, Leeds, and the Society is to be honoured by the presence of the Viscount Lascelles, K.G., D.S.O., as the principal guest of the evening.

The Dinner tickets will be 12*s.* 6*d.* each, including gratuities, application for which must be made at an early date (in any event before Thursday, March 14th, 1929,) to Mr. S. E. Carr, Assistant Secretary, The Chemical Society, Burlington House, Piccadilly, W. 1, accompanied by a remittance for the number of tickets ordered. Separate tables will be arranged as far as possible for members and their friends who desire to sit together.

The Directors of the British Dyestuffs Corporation, Ltd., have most kindly invited a limited number of Fellows and others attending the meetings of the Society on March 21st to visit their works and laboratories at Huddersfield on Friday morning, March 22nd, 1929. Those desiring to avail themselves of this privilege must

inform Mr. H. S. Patterson (The University, Leeds) of their intention before March 19th, 1929.

The Council has accepted an invitation from the British Research Association for the Woollen and Worsted Industries for Fellows attending the meetings in Leeds to visit their laboratories in Torridon, Leeds, on Friday, March 22nd, and also from the British Research Association for the Silk Industry to visit their exhibition and laboratories at the University of Leeds on March 21st and 22nd.

The Railway Clearing House has granted facilities by which those attending the meetings on March 21st will be able to travel from all parts of the country to Leeds at the reduced rate of an ordinary fare and one-third for the double journey, provided that not less than 100 persons avail themselves of this privilege. Tickets will be available from March 20th to 22nd (inclusive). Those who wish to take advantage of this privilege must apply to Mr. S. E. Carr, The Chemical Society, Burlington House, Piccadilly, London, W. 1, for a signed voucher, which must be surrendered at the Booking Office when the ticket is purchased.

List of Papers, of Abstracts thereof, received between January 17th and February 21st, 1929. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting or have appeared in the Journal.)

"Metallic peroxides in group II of the periodic table." By T. R. Perkins.

"Die konstitutionsformel des benzols und der benzolreihe." By P. Geissler.

"The nitration of *m*-acetamido-*tert*.-butylbenzene." By J. B. Shoesmith and A. Mackie.

"The combustion of charcoal in oxygen, nitric oxide, and nitrous oxide. Part I. The adsorption of oxygen." By M. S. Shah.

"The combustion of charcoal in oxygen, nitric oxide, and nitrous oxide. Part II. The effect of temperature." By M. S. Shah.

"The reaction between charcoal and nitrous oxide: the importance of fixed oxygen." By M. S. Shah.

"The catalytic decomposition of nitrous oxide." By M. S. Shah.

"An apparatus for gas analysis." By M. S. Shah.

"The action of *ortho*-phenylenediamines upon dihydroxytartaric acid." By F. D. Chattaway and W. G. Humphrey.

"Salicylaldehyde and its methyl ether." By M. Copisarow.

"Notes on certain diphenyl compounds; the formation of stable 12 : 15-octdiazines, etc., in the diphenyl series. Nuclear rotation about the common axis." By R. J. W. Le Fèvre.

"Mobile anion tautomerism. Part III. A comparison of the activation of three-carbon anionotropic systems by alkyl and aryl groups." By H. Burton.

"The nitration of phenylbenzylamine derivatives." By J. Reilly, P. J. Drumm, and T. V. Creedon.

"The stability of complex metallic salts." By F. G. Mann.

"The complex cobaltic salts of ββ′β″-triaminotriethylamine." By F. G. Mann.

"Compounds of hydroxides of the alkaline earths with sugars." By J. E. Mackenzie and J. P. Quin.

"The mobility of symmetrical triad (prototropic) systems. Part IV. Mobility in the simple three-carbon system terminated by aryl groups." By C. K. Ingold and C. W. Shoppee.

"The systems *N*-butyl alcohol–water and *N*-butyl alcohol–acetone–water." By D. C. Jones.

"Syntheses of cyclic compounds. Part V. The catalytic and thermal decompositions of some normal dibasic acids. A contribution to the problem of the ease of formation of simple carbon rings." By A. I. Vogel.

"Studies in the composition of coal. Plant entities as oil-yielding constituents." By R. Holroyd and R. V. Wheeler.

"The determination of unsaturated and aromatic hydrocarbons in light oils and motor spirits." By A. B. Manning.

"The preparation of *p*-azoxyanisole and derivatives." By W. Davies and R. A. R. Down.

"Synthetical experiments on the aporphine alkaloids. Part V. Laurotetanine. A synthesis of 2 : 3 : 6 : 7-tetramethoxyaporphine." By R. K. Callow, J. M. Gulland, and R. D. Haworth.

"Synthetical experiments on the aporphine alkaloids. Part VI. Laurotetanine. A synthesis of 3 : 4 : 6 : 7-tetramethoxyaporphine." By R. K. Callow, J. M. Gulland, and R. D. Haworth.

"Studies in colour and constitution. Part V. The influence of chlorine, alone and in conjunction with the sulphonic acid group, on the colour of benzeneazophenol." By H. H. Hodgson and W. Rosenberg.

"Ethyl ether. Part I. The products of its autoxidation." By H. King.

"The action of semicarbazide hydrochloride and 2 : 4-dinitrophenyldiazine hydrochloride on aldoximes and their derivatives." By O. L. Brady and F. H. Peakin.

"The isomerism of the oximes. Part XXXIV. The dissociation constants of isomeric oximes and their influence on the pro-

duction of the isomerides in alkaline solution." By O. L. Brady and N. M. Chokshi.

"Elimination of the nitroso-group from nitrosamines." By W. G. Macmillan and T. H. Reade.

"The thermal decomposition of methane. Part I. Decomposition in silica bulbs." By G. C. Holliday and H. C. Exell.

"The nitration of benzylpyridines and oxidation of benzylpiperidines." By F. Bryans and F. L. Pyman.

"The polarity of the halogens in solutions of pyridinium and allied dichloriodides." By T. H. Reade.

"Studies of electrolytic polarisation. Part VII. Complex cyanides. (*a*) Silver." By S. Glasstone.

"Studies of electrolytic polarisation. Part VIII. Complex cyanides. (*b*) Copper." By S. Glasstone.

"Complex oxalates of quadrivalent molybdenum." By H. M. Spittle and W. Wardlaw.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

Association of British Chemical Manufacturers. British chemicals, their manufacturers and uses. London 1929. pp. 298. (*Reference.*) 10*s.* 6*d.* net.

From the Publishers: Messrs. Ernest Benn.

Berry, Arthur John. Volumetric analysis, with a chapter on simple gravimetric determinations. 4th edition. Cambridge 1929. pp. viii + 154. 6*s.* net. (*Recd.* 23/1/29.)

From the Syndics of the Cambridge University Press.

Hilditch, Thomas Percy. Catalytic processes in applied chemistry. London 1929. pp. xx + 360. 16*s.* net. (*Recd.* 29/1/29.)

From the Publishers: Messrs. Chapman & Hall.

Paterno, Emanuele. Conferenze e discorsi scientifici (1877—1926). Roma 1928. pp. 203. *L.* 35. (*Recd.* 23/1/29.)

From the Author.

II. *By Purchase.*

American Chemical Society. *Section of Chemical Education.* Journal of Chemical Education. Vol. I, etc. Easton, Pa. 1924 +. (*Reference.*) [Vols. II and III incomplete.]

Brown, Bruce K., and Crawford, Francis M. A survey of nitrocellulose lacquer. New York 1928. pp. 368. (*Reference.*) 31*s.* 6*d.* net.

Duhem, Pierre. *See* Manville, Octave.

FRARY, FRANCIS C., TAYLOR, CYRIL S., and EDWARDS, JUNIUS DAVID. Laboratory glass blowing. 2nd edition. New York 1928. pp. x + 116. ill. 7*s*. 6*d*. net. (*Recd*. 22/12/28.)

FÜRTH, ARTHUR. Die Werkstoffe für den Bau chemischer Apparate. Leipzig 1928. (Chemische Technologie in Einzeldarstellungen.) pp. viii + 220. ill. *M*. 20. (*Recd*. 15/1/29.)

GEBER. Works, Englished by RICHARD RUSSELL, 1678. A new edition, with introduction by ERIC JOHN HOLMYARD. London 1928. pp. xl + 264. ill. 6*s*. net. (*Recd*. 22/12/28.)

GENTRY, FRANK M. The technology of low temperature carbonization. [Baltimore] 1928. pp. xviii + 399. ill. 34*s*. net. (*Recd*. 20/12/28.)

GERLACH, WALTER. Matter, electricity, energy. The principles of modern atomistics and experimental results of atomic investigation. Translated from the 2nd German edition by FRANCIS J. FUCHS. [New York] 1928. pp. xii + 427. ill. 30*s*. net. (*Recd*. 20/12/28.)

GRASSMANN, W. Neue Methoden und Ergebnisse der Enzymforschung. Enzymchemische Untersuchungen aus dem Laboratorium R. Willstätters. München 1928. pp. iv + 145. ill. *M*. 12.60. (*Recd*. 4/2/29.)

HAAS, ARTHUR. Wave mechanics and the new quantum theory. Translated from the German edition by L. W. CODD. London 1928. pp. xviii + 124. 7*s*. 6*d*. net. (*Recd*. 22/1/29.)

HANDBUCH DER PHYSIK. Edited by HANS GEIGER and KARL SCHEEL. Vol. XX. Licht als Wellenbewegung. Edited by HEINRICH KONEN. Berlin 1928. pp. xvi + 967. ill. *M*. 89. (*Recd*. 15/1/29.)

HARRIMAN, NORMAN F. Standards and standardization. New York 1928. pp. xvi + 265. ill. 15*s*. net. (*Recd*. 28/12/28.)

HEIZMANN, LOUIS. Urinary analysis and diagnosis by microscopical and chemical examination. 5th edition. [New York] 1928. pp. xxii + 366. ill. 22*s*. 6*d*. net. (*Recd*. 17/1/29.)

HOLMYARD, ERIC JOHN. The great chemists. London 1928. pp. vi + 138. ill. 3*s*. 6*d*. net. (*Recd*. 22/12/28.)

HOTTENROTH, VALENTIN. Artificial silk: a complete treatise on the theory, manufacture and manipulation of all the known types of artificial silk. Translated from the German by ERNEST FYLEMAN. London 1928. pp. xvi + 421. ill. 30*s*. net. (*Recd*. 22/12/28.)

CHNOLOGY DEPT.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, March 7th, 1929, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Herbert Eccles	Dec. 5th, 1878.	Aug. 18th, 1928.
James West Knights	May 16th, 1878.	Feb. 6th, 1929.
Francis E. Matthews	June 17th, 1880.	Feb. 24th, 1929.
Charles E. Sutcliffe	Dec. 4th, 1924.	Dec. 28th, 1928.

It was announced that a Fellowship entitled "The Weston Fellowship in Electrochemistry" had been established by the Electrochemical Society in honour of Dr. Edward Weston, inventor of the Weston Cadmium Cell.

The candidate will be selected by the Society, and selection will be based on marked capacity in carrying out research in the science of Electrochemistry or its applications. The award will be made without distinction on account of sex, citizenship, race, or residence. The successful candidate may carry out his research at any university or institute approved by the Society. The date of the first award (approximately $1,000) is not definitely fixed, but will probably be in the autumn of this year. Those interested should apply to the office of the American Electrochemical Society, Columbia University, New York City.

The following List of Nominations for vacant places on the Council was read from the Chair:

Vice-Presidents who have filled the office of President (one vacancy): *W. P. WYNNE.

Vice-Presidents who have not filled the office of President (two vacancies): *T. A. HENRY, *EMILE S. MOND.

* Nominated by the Council.

Country Members, *i.e.* those resident beyond fifty miles from Charing Cross (four vacancies): *G. M. BENNETT (Sheffield); D. R. BOYD (Southampton); C. R. BURY (Aberystwyth); J. A. CRANSTON (Glasgow); *W. E. GARNER (Bristol); H. H. HODGSON (Bradford); *J. I. O. MASSON (Durham); J. REILLY (Cork).

Mr. W. M. Colles and Mr. D. C. Jones were appointed Scrutators to assist in the counting of votes recorded in the election of the Country Members of Council.

The following were formally admitted Fellows of the Chemical Society: B. J. F. Dorrington, E. L. Gates-Warren, L. P. Walls, C. M. Cawley, R. S. W. Thorne, R. D. Desai.

Certificates were read for the first time in favour of:

David Andrew Crighton, B.Sc., 51, Dalmeny Road, Tufnell Park, N. 7.
George Monty Hamilton, M.Sc., 9, The Green, Twickenham.
John Stephen Henthwaite, Canadian Celanese, Ltd., Drummondville, Quebec.
Henry Rowland Hill, B.A., 2, Beeches Walk, Carshalton, Surrey.
William Thornton, M.Sc., 11, John Street, Maidstone.
Herbert Lawton Wright, 117, Queen's Road, Bury St. Edmunds.

The following papers were read:

"The stability of complex metallic salts." By F. G. MANN.

"The determination of unsaturated and aromatic hydrocarbons in light oils and motor spirits." By A. B. MANNING.

"Studies of electrolytic polarisation. Part VII. Complex cyanides. (*a*) Silver." By S. GLASSTONE.

"Studies of electrolytic polarisation. Part VIII. Complex cyanides. (*b*) Copper." By S. GLASSTONE.

"Properties of conjugated compounds. Part VII. The additive formation of *cyclo*hexenes." By E. H. FARMER and F. L. WARREN.

THE THEODORE RICHARDS MEMORIAL LECTURE.

The Theodore W. Richards Memorial Lecture will be delivered by Sir Harold Hartley, M.C., C.B.E., F.R.S., on Thursday, April 25th, 1929, at 5.30 p.m., in the Meeting Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1.

List of Papers, or Abstracts thereof, received between February 21st and March 7th, 1929. (This List does not include the titles

* Nominated by the Council.

of papers, or abstracts thereof, which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Note on the determination of available oxygen by the Bunsen method." By T. W. PARKER and P. L. JOHNSON.

"An apparatus for the accurate control, by an air leak, of the pressure in a closed system which is being continuously evacuated." By J. M. PETERSON and J. H. SHAXBY.

"The introduction of the triphenylmethyl group into phenols. Part II." By D. V. N. HARDY.

"An improved calcium chloride tube." By D. V. N. HARDY.

"Methoxy-derivatives of thioxanthone." By K. C. ROBERTS and S. SMILES.

"The determination of the parachors of substances in solution." By D. L. HAMMICK and L. W. ANDREW.

"The binary system urea and ammonium nitrate. Molecular association in urea, and in ammonium nitrate." By W. J. HOWELLS.

"The influence of mercuric chloride on iodide reactions." By W. B. POLLARD.

"Aminobenzthiazoles. Part XII. The mobility of 1-amino-3 : 5-dimethylbenzthiazole. A case of complete reactivity in the aminothiazole form." By R. F. HUNTER and W. E. PRIDE.

"9-Benzhydrylanthrone and *iso*dianthranyl." By E. DE B. BARNETT and N. F. GOODWAY.

"Note on high-temperature products of iron with hydrogen sulphide, carbon disulphide, and hydrogen selenide." By J. B. PEEL, P. L. ROBINSON, and (in part) C. L. MAVIN.

"Preparation of *o*-nitroacetophenone." By W. O. KERMACK and J. F. SMITH.

"Sur la viscosité de l'éther aux basses températures." By E. VAN AUBEL.

"The apparent influence of an electric field on the boiling point of benzene." By J. W. SMITH.

"The chemotherapy of some bromine derivatives of phenylarsinic acids and arsenobenzenes." By A. HAYTHORNTHWAITE.

"Thioglycollamide as a reagent for identifying arsinic acids." By H. J. BARBER.

"Some derivatives of aryl thiol arsenious acids." By H. J. BARBER.

"A source of error in determining the constitution of di- and poly-saccharides." By J. C. IRVINE and R. P. MCGLYNN.

"The constitution of Guareschi's cyano-butadiene acids. An attempt to synthesise β-*iso*propylglutaconic acid." By C. S. GIBSON and J. L. SIMONSEN.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, MAY 2nd, 1929.

ALDINGTON, JOHN NORMAN, 46, Long Lane, Ashton-on-Ribble, Preston. British. Assistant Works Chemist. B.Sc. (special) 2nd Class Honours in Chemistry (London). Registered student of the Institute of Chemistry. Assistant works Chemist, Siemens Electric Lamps & Supplies, Ltd., 1920–1928. (*Signed by*) G. W. F. Holroyd, C. W. Rogers, C. P. Hines.

BAW, HLA, 3, Tylney Road, Sheffield. Burmese. Student. B.Sc. (Calcutta). *Journ. Ind. Chem. Soc.*, Vol. III, No. 2. "The Use of Leucotrope as a Benzylating Agent." Demonstrator in Chemistry, University of Rangoon, Burma. *J.C.S.*, 1927, "*o*-Nitrobenzylphenyldimethyl ammonium chloride." (*Signed by*) W. P. Wynne, G. M. Bennett, S. Glasstone.

BLOOM, JACK, 38, Albert Grove, Leeds. British. Research Student. B.Sc. (Hons. I) Chemistry, Leeds, 1928. (*Signed by*) C. K. Ingold, C. W. Shoppee, J. W. Baker.

BROOKE, RUPERT WOOLBY, 19, Gloucester Road, S. Kensington, S.W. 7. British. Pharmacist. Member of the Pharmaceutical Society. Associate of the Apothecaries Society. First prizeman in Botany, Materia Medica, Dispensing. Thirty-one years in Pharmacy. Twenty years as Principal. Specialising in manufacturing, analytical, dispensing, and the professional side of Pharmaceutical Chemistry. Desirous of keeping in touch with the developments of Biological Chemistry, and to receive current literature and publications of the Society. (*Signed by*) Reginald Bowsher, Arthur C. V. Weston, George W. Ferguson.

BUTT, FRANCIS ALAN, Pentire, St. Mary's Hill, Paignton. British. Chief Chemist, Torquay & Paignton Gas Co. (*Signed by*) George William Slatter, H. Higham, Ernest Quant.

CUNNINGHAM, ROBERT NEIL, 62, Blenheim Gardens, N.W. 2. British. B.Sc. (Special in Chemistry) University of London. Research Student in Organic Chemistry at University College, London, since July, 1927. (*Signed by*) Henry Terrey, F. G. Donnan, R. Robinson.

FUKUDA, MASAO, Chemical Institute, Faculty of Science, Tohoku Imperial University, Sendai, Japan. Japanese. Research Student. Graduate of the Tohoku Imperial University in 1927 with dissertation on "The Constituents of *Typha angustata*, Bory. et Chaub" (*Bull. Chem. Soc. Japan*, 3, 1928, 53; C. 1928, Bd. 1, 2100). Engaged at present in research work in Organic Chemistry under Prof. H. Nomura at the Tohoku Imperial University. (*Signed by*) Riko Majima, Hiroshi Nomura, Sin-iti Kawai.

GALLOWAY, JAMES, 30, Buccleuch Street, Garnethill, Glasgow. British. Work's Chemist. Glasgow University. 4 years study in Faculty of Science. Manufacturing Chemistry: Coal Tar Products and Ammonia Products, Glasgow Corpn. Chem. Dept. (*Signed by*) T. S. Patterson, G. G. Henderson, S. Horwood Tucker, T. S. Stevens, F. R. Storrie.

HIGGINBOTTOM, CONSTANCE, Quarry Bank, New Mills, Nr. Stockport. British. Technical Assistant in Clinical Laboratory. M.Sc. (Victoria University of Manchester). Student at Manchester University—three years in the Honours School of Chemistry and one year as Research Student. (*Signed by*) Arthur Lapworth, Frederick Challenger, Arnold T. Peters.

HOME-MORTON, ANDREW, 27, Lancaster Gate, W. 2. British-born. General

Manager, The Hoffmann-La Roche Chemical Works, Limited, 51, Bowes Road, N. 13. M.Inst.C.E., M.I.Mech.E., M.I.E.E. (all of London). 1900—23, Consulting Engineer, responsible for, *inter alia*, the design, layout and installation of Buildings, Plant and Equipment for (i) Glasgow Main Drainage, Treatment by Chemical Precipitation of over 100,000,000 gallons of sewage per day, and (ii) many private concerns, engaged in Paper-making, Dyeing and Bleaching, Zinc-recovery, Brass extrusion, drawing and rolling, Whitelead-making, Sugar-refining, Extraction of Tar by-products, Fertilisers, etc. involving Chemical Processes. 1923—Date, General Manager of The Hoffmann-La Roche Chemical Works, Ltd., 51, Bowes Road, N. 13, Manufacturers and Distributors of Alkaloids, Fine Chemicals and Pharmaceutical Products. (*Signed by*) Herbert A. Berens, Ernest T. Neathercoat, Leonard Bayley.

Jones, John Lloyd, 37A, Hartham Road, N. 7. British. Temporary Assistant Government Chemist. B.Sc. Wales [Aberystwyth College]. B.A. Oxon [Jesus College]. Hons. Chemistry, Wales, and Physics, Oxford. At present assistant to Sir Robert Robertson in his researches on infra-red radiations. (*Signed by*) Robert Robertson, J. J. Fox, Geo. Stubbs.

Karkhanavala, Dadabhoy Maneckshaw, "Tardeo Terraces," Tardeo Road, Bombay (India). Parsi Zoroastrian. Ag. Assistant Chemical Analyser to Govt. Bombay. Licentiate of Technical Chemistry (Victoria Jubilee Technical Institute), Bombay. Extensive experience in analyses of food, drugs, chemicals and other technical products in addition to toxicological analysis for the last six years in the office of the Chemical Analyser to Govt. Bombay. (*Signed by*) S. J. Shah, N. J. Vazifdar, C. H. Nanavati.

Kent, Andrew, 207, Kenmure Street, Glasgow, S. 1. Scots. Assistant to Professor of Organic Chemistry. M.A., B.Sc. (Glasgow University). Five years on Chemistry Staff of Glasgow University. (*Signed by*) G. G. Henderson, T. S. Patterson, T. S. Stevens, F. R. Storrie.

Laycock, John Craven, The Spinney, Market Lavington, Wiltshire. English. Student. Chemistry (Honours) Student, Cambridge University. (*Signed by*) A. J. Berry, F. G. Mann, R. G. W. Norrish.

Leishman, Margaret Augusta, Wyberton, Park Hill Road, Croydon, Surrey. British. Demonstration in Chemistry, Bedford College, University of London. B.A. and B.Sc. (Oxon.). (*Signed by*) Ernest S. Hedges, James F. Spencer, M. P. Applebey.

Littlejohn, William Rowe, "Ronda," Evesham Road North, Reigate, Surrey. English. Analytical Chemist at White, Tomkins & Courage, Ltd., Reigate. B.Sc. (London), 1st Class Honours in Chemistry, 1928. Student at University College, Exeter, 1924—1928. (*Signed by*) W. H. Lewis, Ruth King, Ernest J. Parry, Milton Dewhurst.

Moffitt, William George, Bridge House, Carleton Road, Pontefract. British. Research Student. B.Sc. (Hons. I) Chemistry, Leeds, 1928. (*Signed by*) C. K. Ingold, C. W. Shoppee, J. W. Baker.

Nakanishi, Sokichi, Pharmaceutical Institute, Tokyo Imperial University. Japanese. Assistant of the Pharmaceutical Institute, Tokyo University. Graduated 1925 (T.I.U.). Assistant 1925. "Chemical Study of Seeds of *Pharbitis Nil*, Chois," *Journ. Pharm. Soc. Japan*, No. 520. "On Kessylalkohol," *ibid.*, No. 536, 544, 551. (*Signed by*) Y. Asahina, Junzo Shinoda, Shoichi Terada.

Nandi, Birendra Lal, Prome Hall, University Estate, Rangoon, Burma. Hindu. Demonstrator in Chemistry, University College, Rangoon. M.Sc., Calcutta University. A paper on "Reduction of Nitrites, Nitrates, and Nitric Acid with Magnesium Amalgam; a New Method of Preparing Hyponitrites"

(*J.C.S.*, 1928, 1449). Demonstrator in Chemistry for 1 year in University College, Rangoon. (*Signed by*) D. H. Peacock, Maung Ba San, G. C. Moitra.

OCHIAI, EIJI, Pharmaceutical Institute, Tokyo Imp. University. Japanese. Assistant of the Pharmaceutical Institute, Tokyo Imperial University. Graduated 1922 (T.I.U.). Assistant 1925. "On Sinomenin," *Journ. Pharm. Soc. Japan*, No. 497, 503, 538, 539, 549. "On Matrin," *ibid.*, 522, 532, 537, 557, 560, 561. (*Signed by*) Y. Asahina, Junzo Shinoda, Shoichi Terada.

PENNYCUICK, Stuart Wortley, University of Adelaide, South Australia. British. Lecturer in Physical Chemistry. M.Sc. (Univ. of Queensland); D.Sc. (Univ. of Adelaide). Publications other than *J.C.S.*: *J. Amer. Chem. Soc.*, 1923, **45**, 1355; 1926, **48**, 6; 1922, **44**, 1133. *J. Phys. Chem.*, November 1928. *Aus. J. Exp. Biology*, 1926, **3**, 173; 1927, **4**, 99; 1928, **5**, 95; also various papers in the *Aus. Assoc. Adv. Science Reports*. *J.C.S.*, 1924, **125**, 2049; 1927, 2600; 1928, 551, 2018. (*Signed by*) Henry E. Armstrong, R. Robinson, H. Terrey.

RIDLEY, THOMAS MOORE, 18, Scotland Road, Carlisle. British. Pharmaceutical Chemist. Major Examination Pharmaceutical Society of Great Britain. Student of the late Professor A. W. Crossley, F.R.S., 1906—7. Member of the Board of Examiners, Pharmaceutical Society of Great Britain, since January 1927. I am desirous of receiving the Society's Publications. (*Signed by*) Wm. Forster, H. Humphreys Jones, Henry B. Mackie.

ROYLE, FRANK ALBERT, Research Dept., The Graesser Monsanto Chemical Works, Ltd., Ruabon, N. Wales. British. Research Chemist. M.Sc., Ph.D., Manchester. 1913 B.Sc. Chem. Honours (Manc.). 1914 M.Sc. 1916—1919, 1851 Exhibition War Scholarship. 1920—24 Assistant Lecturer, Chem. Dept., University, Manchester. 1924 Sir Clement Royds Scholarship (Manchester), resigned. 1924—1929 Chief Chemist, Graesser Monsanto Chem. Works, Ltd., Ruabon. Joint Author of: "Pungent Principle of Gingerol," Part I, *J.C.S.*, 1917, **111**, 777. "Capsaicin," Part I, *J.C.S.*, 1919, **115**, 1109. "Homocamphor," *J.C.S.*, 1920, **117**, 743. "Hydroxynaphthoic Acids," Parts I and II, *J.C.S.*, 1923, **123**, 1641, 1649. "The Nitration of β-Naphthoic Acid and some New Amino- and Nitro-naphthoic Acids," *J.C.S.*, 1926, 84. (*Signed by*) J. E. Myers, Fred Fairbrother, Colin Campbell.

RUZICKA, LEOPOLD, Utrecht. Organic Chemical Lab. Catharijuesingel 59. Swiss. Professor. "Dr. Ing." (*Signed by*) Jocelyn Thorpe, C. S. Gibson, N. V. Sidgwick.

SMITH, CHARLES GORDON, "Craigside," Higher Bebington, Cheshire. British. Chief Chemist to the Salt Union, Ltd. M.Sc., Birmingham. (*Signed by*) W. E. Gibbs, D. V. Plumbridge, T. P. Hilditch.

SULLY, BERNARD THOMAS DUDLEY, 10, Old Town, Clapham Common, S.W. 4. British. Analytical Chemist. B.Sc. (2nd Class Hons.), London. A.R.C.S. (2nd Class Hons.). A.I.C. Royal College of Science (1924—1927). Assistant Science Master (Chem.) Battersea Grammar School (1927—1928). Diploma in Education, University of London (1928). Present position, analytical chemist, Thos. Parsons & Sons. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, F. P. Walton.

SUMNER, ANDREW THEODORE, "Melatti," Hurst Road, East Molesey, Surrey. British. Civil Servant. B.Sc., London University. Assistant Lecturer, Chemical Dept., Middlesex Hospital, Medical School, 1911—14. Process Chemist with Messrs. Burroughs, Wellcome & Co., 1919—21. On the staff of Chemical Warfare Research Dept. from 1921 to date. (*Signed by*) J. Davidson Pratt, Jocelyn Thorpe, A. J. Allmand.

TERASAKA, MASANOBU, Tokushima Technical College, Japan. Japanese.

Lecturer. "Action of Organomagnesium Compounds upon Oxynitrils. I." (A New Method for the Preparation of Substituted Benzoins.) Y. Asahina and M. Terasaka, *Journ. Pharm. Soc. Japan*, 1923, 19, C. 1923, III, 434. (*Signed by*) Yasuhiko Asahina, Tatsuo Nakasato, Junzo Shinoda.

TYRRELL, LEONARD NOEL, 6, Providence Rd., Yiewsley, Middlesex. British. Work's Analytical and Research Chemist. Three years chemist in the Analytical Laboratory of the Gramophone Co., engaged in miscellaneous works analyses, and the analysis of record materials in particular. Four years Chief Assistant Chemist, Chemical Research Laboratories, of Gramophone Co., Hayes. At present Chief Chemist to the Electramonic Co., in charge of all analytical and chemical research work, and (shortly) to take technical responsibility for the manufacture of records, matrices, recording waxes, etc. Also three years with the Techno-Chemical Laboratories of Clapham. (*Signed by*) P. C. L. Thorne, H. A. Williams, J. R. Booer.

The following Certificate has been authorised by the Council for presentation to ballot under Bye-Law I (2):

COOK, LAWRENCE HARVEY, Box 607, Menlo Park, Calif., U.S.A. American. Professor of Organic Chemistry at Santa Clara Univ. A.B., Stanford; A.M. Stanford. Teacher of chemistry, and research worker. (*Signed by*) James W. McBain.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ACADÉMIE POLONAISE DES SCIENCES ET DES LETTRES. *Classe des Sciences Mathématiques et Naturelles.* Mémoires. Series A and B. No. 1, etc. Cracovie 1928 +. (*Reference.*)

—— —— Comptes Rendus Mensuels des Seances. No. 1, etc., Cracovie 1929 +. (*Reference.*) From the Academy.

AMERICAN CHEMICAL SOCIETY. Industrial and Engineering Chemistry. Analytical edition. Vol. I, etc. New York 1929 +. (Two copies.) From the Society.

CHEMICAL ENGINEERING AND CHEMICAL CATALOGUE. 5th edition. Edited by DUDLEY MAURICE NEWITT. London 1929. pp. 401. ill. (*Reference.*) 15*s.* net.
From the Publishers: Messrs. Leonard Hill.

COLLECTION OF CZECHOSLOVAK CHEMICAL COMMUNICATIONS. Year I, etc. Prague 1929 +. (*Reference.*) From the Editors.

ELEKTROTECHNISCHE ZEITSCHRIFT. (Zentralblatt für Elektrotechnik.) Year XLIX, etc. Berlin 1928 +. (*Reference.*)
From Dr. R. E. W. Maddison.

GLASSTONE, SAMUEL. Chemistry in daily life. London 1929. pp. vi + 250. ill. 6*s.* net. (*Recd.* 7/3/29.) From the Author.

HATFIELD, WILLIAM HERBERT. The application of science to the

steel industry. Edward de Mille Campbell Memorial Lecture. Cleveland 1928. pp. x + 154. ill. (*Recd.* 7/3/29.)
From the Author.

HAUSBRAND, EUGEN. Evaporating, condensing, and cooling apparatus. Explanations, formulæ and tables for use in practice. Translated from the 2nd German edition by ARTHUR C. WRIGHT. 4th English edition. Revised and enlarged by BASIL HEASTIE. London 1929. pp. 468. ill. 25*s.* net. (*Recd.* 6/3/29.)
From the Publishers: Messrs. Ernest Benn.

KONINKLIJKE AKADEMIE VAN WETENSCHAPPEN TE AMSTERDAM. Verslag van de gewone vergadering der Afdeeling Natuurkunde. Vol. XXXVIII, etc. Amsterdam 1929 +. (*Reference.*)
From the Academy.

KONOVALOV, DMITRI PETROVIC. Vapour pressure of solutions. Leningrad 1928. pp. viii + 67. ill. [In Russian.] (*Recd.* 18/2/29.)
From the Author.

LOWRY, THOMAS MARTIN, and SUGDEN, SAMUEL. A class book of physical chemistry. London 1929. pp. viii + 436. ill. 6*s.* 6*d.* net. (*Recd.* 18/2/29.)
From the Authors.

MARSH, JAMES ERNEST. The origins and growth of chemical science. London 1929. pp. x + 161. ill. 5*s.* net. (*Recd.* 19/2/29.)
From the Author.

RUSSIAN PHYSICAL AND CHEMICAL SOCIETY. Journal of Applied Chemistry. Vol. I, etc. Leningrad 1928 +. (*Reference.*) [In Russian.]
From the Society.

UNION OF SOCIALIST SOVIET REPUBLICS. *Thermotechnical Institute.* Annales. No. 1 (34), etc. Moscow 1928 +. (*Reference.*) [In Russian.]
From the Institute.

II. *By Purchase.*

BADGER, WALTER LUCIUS, and BAKER, E. M. Inorganic chemical technology. New York 1928. pp. viii + 228. ill. 12*s.* 6*d.* net. (*Recd.* 22/2/29.)

HOUBEN, JOSEF, and FISCHER, WALTER. Das Anthracen und die Anthrachinone mit den zugehörigen vielkernigen Systemen. Leipzig 1929. pp. xxiii + 890. *M.* 90. (*Recd.* 10/1/29.)

KEFFER, ROBERT, in collaboration with CHARLES L. MCNEIL. Methods in non-ferrous metallurgical analysis. Prepared for publication by ALLISON BUTTS. New York 1928. pp. xviii + 335. ill. 20*s.* net. (*Recd.* 22/2/29.)

LASSAR-COHN. Organic laboratory methods. Authorized translation from the general part of the 5th revised edition. By RALPH E. OESPER. Edited by ROGER ADAMS and HANS THACHER CLARKE. [Baltimore] 1928. pp. xii + 469. ill. 30*s.* net. (*Recd.* 22/2/29.)

LEWIN, LOUIS. Gifte und Vergiftungen. Vierte Ausgabe des Lehrbuchs der Toxikologie. Berlin 1929. pp. viii + 1087. ill. *M.* 55. (*Recd.* 22/2/29.)

[MANVILLE, OCTAVE, HADAMARD, JACQUES, and DARBON, A.] L'œuvre scientifique de PIERRE DUHEM. Paris 1928. pp. 554. ill. 120 *fr.* (*Recd.* 15/2/29.)

MARTIN, HUBERT. The scientific principles of plant protection. London 1928. pp. xii + 316. 21*s.* net. (*Recd.* 17/1/29.)

MAYRHOFER, ADOLF. Mikrochemie der Arzneimittel und Gifte. Teil II. Die Arzneimittel organischer Natur. Berlin 1928. pp. x + 270 + 15 plates. ill. *M.* 18.50. (*Recd.* 15/1/29.)

MERNAGH, LAURENCE REGINALD. Enamels: their manufacture and application to iron and steel ware. London 1928. pp. xvi + 234. ill. 18*s.* net. (*Recd.* 20/12/28.)

NORTON, THOMAS. The ordinall of alchimy: being a facsimile reproduction from Theatrum Chemicum Britannicum with annotations by ELIAS ASHMOLE. With introduction by ERIC JOHN HOLMYARD. London 1928. pp. viii + 125. 10*s.* 6*d.* net. (*Recd.* 22/12/28.)

OSEEN, CARL WILHELM. Die anisotropen Flüssigkeiten, Tatsachen und Theorien. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XX.) Berlin 1929.

PAULING, HARRY. Elektrische Luftverbrennung. Halle (Saale) 1929. pp. viii + 188. ill. *M.* 17.50. (*Recd.* 15/2/29.)

PORTER, CHARLES WALTER. Molecular rearrangements. New York 1928. pp. 167. 17*s.* net. (*Recd.* 23/2/29.)

RICHTER, VICTOR VON, and ANSCHÜTZ, RICHARD. Chemie der Kohlenstoffverbindungen oder Organische Chemie. 12th edition. Edited by RICHARD ANSCHÜTZ. Vol. I. Aliphatischen Verbindungen. By FRITZ REINDEL. Leipzig 1928. pp. xvi + 882. (*Reference.*) *M.* 59.

RIEGEL, EMIL RAYMOND. Industrial chemistry: an introduction. New York 1928. pp. 649. ill. 37*s.* 6*d.* net. (*Recd.* 22/1/29.)

ROBERTS, J. KEITH. Heat and thermodynamics. London 1928. pp. xvi + 454. ill. 30*s.* net. (*Recd.* 20/12/28.)

ROSENTHALER, LEOPOLD. Grundzüge der chemischen Pflanzenuntersuchung. 3rd edition. Berlin 1928. pp. iv + 160. *M.* 9. (*Recd.* 16/1/29.)

SCHMIEDER, KARL CHRISTOPH. Geschichte der Alchemie. Halle 1832. Edited by FRANZ STRUNZ. München–Planegg 1927. pp. 28 + x + 613. *M.* 10. (*Recd.* 30/1/29.)

SCHULTZ, GUSTAV. Farbstofftabellen. 7th edition. By LUDWIG LEHMANN. Vol. I, etc. Berlin 1928 +. (*Reference.*)

SCIENTIFIC AMERICAN CYCLOPEDIA OF FORMULAS. Partly based upon the 28th edition of Scientific American cyclopedia of receipts, notes and queries. Edited by ALBERT A. HOPKINS. New York 1928. pp. viii + 1077. ill. (*Reference.*). 27*s.* 6*d.* net.

SNODGRASS, KATHERINE. Copra and coconut oil. California 1928. pp. xiv + 135. ill. 8*s.* net. (*Recd.* 22/1/29.)

THOMSON, SIR JOSEPH JOHN, and THOMSON, GEORGE PAGET. Conduction of electricity through gases. 3rd edition. Vol. I. Cambridge 1928. pp. viii + 491. ill. 25*s.* net. (*Recd.* 17/1/29.)

TRAVERS, MORRIS WILLIAM. The discovery of the rare gases. London 1928. pp. viii + 128. ill. 15*s.* net. (*Recd.* 20/12/28.)

TREADWELL, FREDERICK PEARSON. Analytical chemistry. 7th edition. Vol. II. Quantitative analysis. Translated, enlarged and revised by WILLIAM THOMAS HALL. New York 1928. pp. xiv + 848. ill. 30*s.* net. (*Recd.* 22/1/29.)

VAIL, JAMES G. Soluble silicates in industry. New York 1928. pp. 443. ill. 40*s.* net. (*Recd.* 17/1/29.)

VERNON, WILLIAM HAROLD JUGGINS. A bibliography of metallic corrosion, comprising references to papers on ferrous and non-ferrous corrosion (including methods of protection) published up to the end of 1927. London 1928. pp. xii + 341. (*Reference.*) 21*s.* net.

WAGNER, HANS. Die Körperfarben. (Chemie in Einzeldarstellungen, Vol. XIII.) Stuttgart 1928. pp. xx + 506. ill. *M.* 36. (*Recd.* 5/2/29.)

WHITEHEAD, S. Dielectric phenomena. II. Electrical discharges in liquids. Edited by E. B. WEDMORE. London 1928. pp. 137. ill. 12*s.* 6*d.* net. (*Recd.* 20/12/28.)

WOHRYZEK, OSKAR. Chemie der Zuckerindustrie. Ein Handbuch für Wissenschaft und Praxis. 2nd edition. Berlin 1928. pp. xvi + 680. ill. *M.* 38. (*Recd.* 22/2/29.)

WOLFF, HANS. Die natürlichen Harze. (Monographien aus dem Gebiete der Fett-Chemie, Vol. X.) Stuttgart 1928. pp. xvi + 379. ill. *M.* 28. (*Recd.* 31/12/28.)

III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Bulletin No. 38. The chemical composition of wool with especial reference to the protein of wool-fibre (keratin). By HEDLEY R. MARSTON. Melbourne 1928. pp. 36. ill.

—— —— Bulletin No. 39. The utilization of sulphur by animals with especial reference to wool production. By HEDLEY R. MARSTON and THORBURN BRAILSFORD ROBERTSON. Melbourne 1928. pp. 51.

BAIKOV, A. A. Dmitri Petrovic Konovalov. Leningrad 1928. pp. 19. ill. [In Russian.]

BENGAL, GOVERNMENT OF. *Department of Industries.* Bulletin No. 18. Bleaching of *gangwa* wood (*Excœcaria agallòcha*) in the manufacture of matches. By RASIK LAL DATTA and TINKARI BASU. Calcutta 1923. pp. ii + 6.

—— —— Bulletin No. 23. Chemical composition for matches. By RASIK LAL DATTA and TINKARI BASU. Calcutta 1927. pp. 4.

—— —— Bulletin No. 27. On the preparation of a solution containing phosphoric acid directly from bone ash for the impregnation of match sticks for making them non-glowing. By RASIK LAL DATTA and TINKARI BASU. Calcutta 1927. pp. 5.

BHATNAGAR, S. S. and MATHUR, R. N. Magnetic properties of molecules constituting electronic isomers. Lahore 1928. pp. 13.

COATS, HAL B., and BROWN, GEORGE GRANGER. A vapor-pressure chart for hydrocarbons. (*Department of Engineering Research, University of Michigan, Circular Series* No. 2.) 1928. pp. 17 + chart.

FARADAY SOCIETY. Celebration of twenty-fifth anniversary, 9th November 1928. London 1928. pp. [15].

—— First Spiers Memorial Lecture by SIR OLIVER LODGE, on "Some debatable problems in physics." London 1928, pp. 12.

INDIAN LAC ASSOCIATION FOR RESEARCH. Bulletin No. 1. Physical properties of shellac solutions. By M. RANGASWAMI and M. VENUGOPALAN. Calcutta 1928. pp. 14. ill.

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. The costing of chemical manufacturing processes. By L. STANIFORTH. London 1929. pp. 24.

KONOVALOV, DMITRI PETROVIC. *See* BAIKOV, A. A.

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 49. Firedamp explosions within closed vessels: "pressure piling." By C. S. W. GRICE and RICHARD VERNON WHEELER. London 1929. pp. 26. ill.

—— —— Paper No. 50. The deterioration of colliery winding ropes in service with descriptions of some typical failures. By S. M. DIXON, M. A. HOGAN, and J. M. ROBERTSON. London 1928. pp. 42 + 6 plates.

MINISTRY OF HEALTH and MINISTRY OF AGRICULTURE AND FISHERIES. *Joint Advisory Committee on River Pollution.* First Report. London 1928. pp. 8.

NEWCOMB, CLIVE. On the interpretation of nutritional experiments. (From the *Indian J. Med. Research*, 1928, **16**.) ill.

NEWELL, LYMAN C. Count Rumford—scientist and philanthropist. (From *Science*, 1928, **68**.)

NEWELL, LYMAN C., and DAVIS, TENNEY L. Notable New England chemists. Boston, Mass. 1928. pp. 16. ill.

RUMFORD, SIR BENJAMIN THOMPSON, COUNT. *See* NEWELL, LYMAN C.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. Third report of the Gas Cylinders Research Committee. (Alloy steel light cylinders.) London 1929. pp. iv + 74. ill.

—— Fourth report of the Gas Cylinders Research Committee. (Cylinders for liquefiable gases.) London 1929. pp. vi + 151. ill.

—— *Building Research.* Special Report No. 11. Heat transmission. By MARGARET FISHENDEN and ARTHUR FELIX DUFTON. London 1929. pp. vi + 19. ill.

—— —— Technical Paper No. 7. Investigations on breeze and clinker aggregates. By FREDERICK MEASHAM LEA. London 1929. pp. iv + 86.

—— *Fuel Research.* Physical and chemical survey of the national coal resources, No. 13. The Yorkshire, Nottinghamshire, and Derbyshire coalfield. South Yorkshire area: the Parkgate seam. London 1929. pp. iv + 61. ill.

—— —— Technical Paper No. 21. The assay of coal for carbonisation purposes. (Part ii.) By JAMES GRIEVE KING, CYRIL TASKER, and L. J. EDGCOMBE. London 1929. pp. vi + 34. ill.

SCOTTISH BOARD OF HEALTH. The pollution and purification of rivers with special reference to domestic sewage. Reprinted from the 9th annual report, 1927. Edinburgh 1928. pp. 46.

UNION OF SOCIALIST SOVIET REPUBLICS. *Scientific Technical Department of the Supreme Council of National Economy.* Central Institute for Tobacco Investigations. Bulletin No. 29. Die Ergebnisse der physiologischen Arbeiten der fermentativen Section, 1925. (Part 1.) By A. J. SMIRNOV [and others]. Krasnodar 1926. pp. iv + 54. [In Russian. German summary.]

—— —— —— Bulletin No. 30. Das Verhältniss der Tabakpflanze zur Phosphorsäuredüngung. (Vorläufige Mitteilung.) By A. V. OTRYGANIEV. Krasnodar 1926. pp. 42. [In Russian. French summary.]

—— —— —— Bulletin No. 31. Tabakkulturversuche mit Mineraldüngung auf den Feldern der Stanitze Abinskaja (Kubangebiet) im Jahre 1925. By A. V. OTRYGANIEV and D. V. BALANDA. Krasnodar 1926. pp. 31. [In Russian. German summary.]

—— —— —— Bulletin No. 33. Contents of carbohydrates and phenols in tobacco in relation to its colour and quality. By A. SCHMUCK (in collaboration with V. SEMENOVA). Krasnodar 1927. pp. 22. [In Russian. English summary.]

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

ANNIVERSARY DINNER.

THE Anniversary Dinner of the Chemical Society was held in the Town Hall, Leeds, on Thursday, 21st March, 1929, at 7 for 7.30 p.m. The President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., was in the Chair, and the following were present (282):

Achmatowicz, O.
Adam, N. K.
Allan, J.
Anderson, J.
Applebey, M. P.
Applebey, Mrs. M. P.
Appleyard, G. H.
Asquith, B.
Asquith, Miss K. R.
Baillie, J. B., O.B.E., *Vice-Chancellor, Leeds University.*
Bain, W.
Baker, J. W.
Baker, Mrs. J. W.
Baly, E. C. C., C.B.E., F.R.S.
Baly, Mrs. E. C. C.
Barker, S. G.
Barker, Mrs. S. G.
Barritt, J.
Bearder, E. A.
Bedford, C. S.
Bedson, P. P.
Bolton, J. W.
Bennett, Miss D. M.
Bennett, G. M.
Bentley, A.
Bjilmann, Einaar, *President, Union Internationale de la Chimie Pure et Appliquée.*
Billbrough, S.
Bodenstein, Max, *representing the Deutsche Chemische Gesellschaft.*
Bousfield, H. D., C.M.G., D.S.O., T.D., J.P.
Bovill, P. J.
Boyce, F.
Boyle, C. H.
Boyle, Mrs. C. H.
Branson, F. W.
Briggs, S. H. C.
Briscoe, H. V. A.
Briscoe, Mrs. H. V. A.
Bruce, J.
Burgess, W. A. A.
Burrell, Miss A. M.
Burton, H.
Burton, Mrs. H.
Bywaters, H. W.
Bywaters, Mrs. H. W.
Calam, P.
Calam, Mrs. P.
Carr, S. E., *Assistant Secretary.*
Cawood, W.
Channon, H. J.
Channon, Mrs. H. J.
Chapman, A. W.
Charlton, W.
Child, G.
Clarke, C. H.
Clarkson, G. D.
Clayton, W. F.
Clemo, G. R.
Clibbens, D. A.
Coates, J. E., O.B.E.

Cobb, J. W., C.B.E.
Cobb, Mrs. J. W.
Cohen, J. B., F.R.S.
Colbeck-Welch, G. M.
Comber, N. M.
Comber, Mrs. N. M.
Connell, Mr.
Cooper, K. E.
Copley, James F.
Coppock, J. B.
Coppock, Mrs. J. B.
Craven, J. A.
Cronshaw, C. J. T.
Cronshaw, Mrs. C. J. T.
Cumming, W. M.
Daily Mail.
Dawson, H. M.
Dawson, Mrs. H. M.
Denham, W. S.
Denham, Mrs. W. S.
Dixon, G.
Dixon, H. B., C.B.E., F.R.S., *Past President.*
Dixon, H. W.
Dodd, A. H.
Donald, M. B.
Donald, M. H.
Donnan, F. G., C.B.E., F.R.S., *Foreign Secretary.*
Draper, W. G.
Dunn, F. P.
Dunn, J. T.
Eagles, B. A.
Eastman, Cyril, *President, Society of Dyers and Colourists.*
Eastwood, D. B.
Eldridge, A. A.
Evans, T.
Everest, A. E.
Everest, Mrs. A. E.
Fargher, R. G.
Findlay, A.
Finn, C. P.
Fleck, A.
Forster, R. B.
Forster, Mrs. R. B.
Fowweather, F. S.
Frank, G. H.
Frobisher, Arnold.
Gawler, R.
Gawler, Mrs. R.
Gibson, C. S., O.B.E., *Secretary.*
Glasstone, S.
Gomersall, Miss.
Goss, F. R.
Gray, R. Whytlaw, O.B.E., F.R.S.
Gray, Mrs. R. Whytlaw.
Greenaway, A. J.
Gregory, J. C.
Hagues, G.
Hagues, Mrs. G.
Hanley, J.
Hardwick, W. R.
Hardwick, Mrs. W. R.
Harley, R. B.
Harral, J. C.
Haskew, R. S.
Hatswell, F. T.
Hatswell, Mrs. F. T.
Haworth, W. N., F.R.S.
Hay, F. W.
Hebden, G. A.
Henry, T. A., *Vice-President.*
Hickson, B.
Hill, W. B.
Hindle, G. W.
Hinks, E., M.B.E., *President, Society of Public Analysts.*
Hirst, H. R.
Hodsman, H. J., M.B.E.
Holborn, M. W.
Holborn, Mrs. M. W.
Houston, C.
Hughes, J. D. I.
Hunter, H.
Ingle, W. L.
Ingold, C. K., F.R.S.
Jaffé, Adoff.
James, E. C.
James, T. C.
Jamieson, J. Kay, *Dean of the Faculty of Medicine, Leeds University.*
Johnson, G. Y.
Jones, B. Mouat, D.S.O.
Kenner, J., F.R.S.
King, A. T.
Kitson-Clark, E. D.
Lady Mayoress of Leeds.
Lampitt, L. H.
Lascelles, Rt. Hon. the Viscount, K.G., D.S.O.
Legg, V. H.
Legg, Mrs. V. H.
Levinstein, H., *Chairman of Council, Society of Chemical Industry.*
Liley, T. A.

Livesey, C. E. L.
Lord Mayor of Leeds.
Lowson, W.
Luff, B. D. W.
Lunn, J. W.
Macaulay, Mr.
McCandlish, David.
McCandlish, Mrs. David.
McCandlish, Douglas.
McCandlish, Mrs. Douglas.
McCombie, H., D.S.O., M.C.
McLennan, B. G.
McSwiney, B. A.
McSwiney, Mrs. B. A.
Manley, C. H.
Manley, Mrs. C. H.
Marston, H. B.
Mason, Miss E.
Mason, H. M.
Mason, Mrs. H. M.
Masson, Irvine, M.B.E.
Mellor, L.
Milne, W. P.
Milne, Mrs. W. P.
Mitchell, A. D., *Assistant Editor.*
Moffitt, W. G.
Mond, Emile S., *Vice-President.*
Moore, T. S., *Secretary.*
Morris, H. J.
Narayanan, B. T.
Nicholson, A.
Nickols, N. F.
Orton, K. J. P., F.R.S.
Parkin, John.
Parkin, Mrs. J.
Patterson, H. S.
Patterson, J. W.
Pease, C.
Pentecost, L. S., M.C.
Pentecost, S. J.
Perkin, A. G., F.R.S.
Perkin, Mrs. A. G.
Perkin, W. H., F.R.S., *Past-President.*
Philip, J. C., O.B.E., F.R.S., *Vice-President.*
Philip, Miss J. L.
Pickard, R. H., F.R.S.
Pickering, G. F.
Pickering, Mrs. G. F.
Pitt, H. Russell.
Rao, K. A. N.
Richardson, F. W.
Rimmington, C.
Roberts, J. A. F.
Robertson, Sir Robert, K.B.E., F.R.S.
Robinson, R., F.R.S.
Rowe, F. M.
Rowe, Mrs. F. M.
Rule, A.
Russell, Mrs. F. C.
Russell, J.
Russell, W. R., *Sectional Chairman, Coke Oven Managers' Association.*
Savage, F. C.
Shaw, Miss F. R.
Sheffield Telegraph.
Shoppee, C. W.
Sidgwick, N. V., F.R.S.
Simonsen, J. L.
Simonsen, Mrs. J. L.
Slade, R. E.
Slade, Mrs. R. E.
Smallwood, A.
Smith, C., *Editor.*
Smith, F. E.
Smith, G. F.
Smith, H. Greville.
Smith, Henry G.
Smith, J. Cruickshank.
Smith, T. B.
Stembridge, G.
Stevenson, W. W.
Stock, C. J. H.
Tainsh, P., O.B.E.
Tankard, A. R.
Tansley, L. B., M.C.
Taylor, F.
Tetley, C. F., J.P.
Tetley, Col. C. H., D.S.O., *Pro-Chancellor, Leeds University.*
Tetley, Mrs. C. H.
Tetley, E. H.
Thomas, R.
Thompson, F. C.
Thompson, Mrs. F. C.
Thompson, J. T.
Thorpe, J. F., C.B.E., F.R.S., *President.*
Thorpe, Mrs. J. F.
The Times.
Towers, J. C.
Turner, Miss E. G.
Usher, F. L.
Vardy, W. A. S.

Vardy, Mrs. W. A. S.
Vass, C. C. N.
Waghray, P. N.
Walker, F. H.
Watson, H. W.
Watson, Mrs. H. W.
West, Miss E.
Wightman, W. A.
Wightman, Mrs. W. A.
Williams, R. H.
Wilson, F. J.
Wilson, Capt.
Witham, E.
Woolcock, J. W.
Wuorinen, O. A.
Wynne, W. P., F.R.S., *Past-President.*
Yorkshire Observer.
Yorkshire Post.
Young, A. F.

The following is a list of the Toasts proposed :—

1. The King.

2. The Queen, the Prince of Wales, and the other members of the Royal Family.

By The Right Honourable THE VISCOUNT LASCELLES, K.G., D.S.O. :—

3. "The Chemical Society," coupled with the name of the President.

By Sir ROBERT ROBERTSON, K.B.E., D.Sc., F.R.S., Vice-President :—

4. "The City of Leeds," coupled with the name of the Lord Mayor of the City of Leeds.

By Professor HAROLD B. DIXON, C.B.E., D.Sc., F.R.S., Past President :—

5. "The University of Leeds," coupled with the name of Dr. J. B. BAILLIE, O.B.E., M.A., Vice-Chancellor of the University of Leeds.

By Professor R. WHYTLAW GRAY, O.B.E., Ph.D., F.R.S. :—

6. "The Guests," coupled with the name of Professor EINAAR BILMANN, President, Union Internationale de la Chimie Pure et Appliquée.

After the Loyal Toasts had been honoured, VISCOUNT LASCELLES, proposing the Toast of "The Chemical Society," said :—

"Upon my shoulders has been put the duty of proposing the most important toast of the evening, and I rise with great trepidation to do so, partly because I have never felt very much at home in the presence of great scientists, and I have always been very frightened of the chemists.

"Now the present company has started the evening by instilling a mortal fear in me—one of you gentlemen in front of me introduced to our company a black cat, and a black cat always gives me a furry feeling of the tongue. I therefore must beg you to excuse me if

my tongue plays me false and I say anything I should not. But, ladies and gentlemen, on behalf of the West Riding of Yorkshire I do want to express our great pleasure in having this great and important Society in our midst. I say so especially because there is, I am confident, no portion of this country which owes more to the activities of the science of chemistry.

"In the Charter of this Society it is stated that it was formed for the advancement of chemical science as connected with the prosperity of manufactures in the United Kingdom. Now, we in the West Riding of Yorkshire are more dependent upon the discoveries connected with the art of dyeing than almost any other county in the country, and the great achievement which was started by two Fellows of this Society—Frankland and Crum Brown—and further developed by Sir William Perkin, has been instrumental, if not in creating the prosperity of a large portion of this county, at any rate in saving it from the worst periods of distress which have fallen upon other portions of the country. The art of dyeing has so strong an influence upon the prosperity of our textile industry that I need not labour the point any more with a West Riding audience. The textile industry is widespread. Weaving, spinning, and the making of the machinery which is used in those industries, which again reflects upon the iron and steel industry in the southern portion of the county—all of them have to some extent benefited by these great discoveries. The intimate connection which exists between this Society and the University of Leeds has been greatly fostered by the son of one of those distinguished gentlemen whom I have named, namely, Professor A. G. Perkin.

"It is not my intention to trespass upon the toast which will be proposed to your notice later in the evening, but, as I understand the activities of the Chemical Society, they are very largely connected with the dissemination of knowledge and applying the discoveries which take place in the sphere of chemistry for use in the practical life of this country. We have noted the happy connection between this Society and the University of Leeds—a combination which I hope will in time achieve even greater things than it has already done for the benefit of the West Riding of Yorkshire.

"Mr. President, your Chemical Society has an income which I am sure you find inadequate for the uses to which you would like to put it, but I have not yet met a Society or a man that had an income adequate to the uses to which it or he would like to put it, and, if I may say so, the Society or the man whose income is adequate to the uses to which he would like to put it is one whose energy is dwindling. The man whose energy is on the increase will always require more income and more scope for that energy. Let me hope that this

Society, in common with all others, continues to find its income inadequate on the ground that I have already mentioned. Nevertheless, I ask you, ladies and gentlemen, to join me in wishing for an increased income and prosperity for the Chemical Society, and I ask you to rise and empty your glasses in order to prove the sincerity of your wishes."

The PRESIDENT, who responded, said: "In the first place I should like to thank Lord Lascelles for the kindness he has shown us in coming here to-night and also for the very happy words in which he has proposed the toast of 'The Chemical Society.' I think you will agree that not for many years has this toast been proposed in such admirable terms as those which Lord Lascelles has used to-night.

"It is not my duty to propose the toast of 'The Guests,' but I should like to mention that besides Lord Lascelles, we have present with us the Lord Mayor and Lady Mayoress of Leeds and the Vice-Chancellor of the University of Leeds, and we wish to offer them a very hearty welcome. There are certain telegrams I have to read. One is from Dr. Whiteley, wishing success to the meeting, another from Dr. Slater Price, our Treasurer, expressing regret for his inability to be present, and the third from the French Society of Chemical Industry. My next duty is to thank the General Committee and the Executive Committee, of whom Professor Whytlaw Gray is the Chairman, and particularly Mr. H. S. Patterson, who has undertaken the very arduous secretarial work attaching to a meeting of this kind. I would like to express, on my own behalf and on that of the Council and the Fellows, my sincere thanks to these gentlemen. Also we have a number of co-operating Societies who have helped to bring about what I feel, and you will all agree, is a successful meeting—the local sections of the Institute of Chemistry, the Society of Chemical Industry, the Society of Public Analysts, the Coke Oven Managers' Association, and the Society of Dyers and Colourists. We are profoundly grateful to them for what they have done.

"Another pleasant duty I have to perform is to offer the congratulations of the Society to those Fellows who have completed fifty years in Fellowship. Mr. William Jago, I understand, is unable to be present at the Dinner, though he attended the Annual General Meeting, but we have present Professor P. Phillips Bedson, and we all wish to express to him our heartiest congratulations, coupled with the hope that he may not only be here ten years hence, but twenty years hence.

"Well, Lord Lascelles, I feel that you have never met so many chemists before. They are not really a bad lot. As was remarked

by our Foreign Secretary, speaking to the President of the Royal Academy at our last Anniversary Dinner, 'They are not so bad as they are painted.' But they suffer under one very great disadvantage—they are saddled with a name which is given by Act of Parliament to some totally different body of people who in other countries are called apothecaries and druggists. In almost every other country in the world the people who dispense drugs are called druggists. I doubt whether the Fellows of this Society are really competent to fulfil the functions of a druggist. It is possible that quite a number of people in this room would be able, after mature consideration, to tell the difference between Epsom salts and oxalic acid, but I doubt if any who attempted to prescribe a dose of either could avoid being prosecuted for manslaughter. Why people who deal with minerals should be called mineralogists, and people who deal with chemicals should not be called chemicalogists, no one knows.

"This, ladies and gentlemen, is my last appearance as President at a public dinner. I go on functioning till next March, but my spring will be run down just before the anniversary meeting next year, and therefore I should like to point out to you the progress the Society has made during the year I have held the Presidency.

"I think the most important item in that connection is the fact that we have been definitely recognised by the Inland Revenue as a Society constituted in the public interest. That is a real step forward. It shows that the Society has undertaken and carried through the work which was assigned to it in its Charter so many years ago. It has published freely and placed everything at the disposal of those who wish to utilise it. I don't know whether I can say anything—I should like to—about the very large number of chemical societies existing in this country. I touched upon that point in my address this afternoon. I don't know why English people are so intensely individual, but it is a characteristic of British people and has to be dealt with. It makes us a nation, in a sense, in many respects, greater or better than others, but it has its handicaps. It seems to me that the Anglo-Saxon race is apt to have too many queen bees—people who want to hive off and form societies of their own. Well, ladies and gentlemen, that may be an excellent thing from an apiarian point of view—I am sure it is a very bad thing from a chemical point of view. If we really take matters into consideration, we may find, as we have found in the last few years, that we have many points in common, and we can save duplication and so forth by co-operation."

Sir Robert Robertson proposed "The City of Leeds," and in

doing so said: "The toast which I have to lay before you is that of 'The City of Leeds,' coupled with the name of the Lord Mayor. In proposing such a toast, the first thought that naturally comes to one's mind is that of hospitality. I speak with the recollection of two years ago, when the British Association met in Leeds, and all of us who were here on that occasion will recollect the wonderful hospitality we received at the hands of this city. We recollect the civic hospitality, and we have the pleasantest of memories of the private hospitality of its citizens and of the beauty of the surroundings of the city. To refresh my memory I had recourse to that blue book issued by the British Association, and in that book you will find possibly some of the reasons why Leeds is the great city it is. You will find references to the geological formation, strata and line, the geographical contours of the land, its position with regard to rivers, and all that sort of thing, with the implication that these have been the features which have made it great, but I prefer to think there is another reason—the essential qualities of the Yorkshireman. The chief guest of this evening has told us of the great diversity of industries which are the salvation of this city. Its fame and its prosperity rest not upon one foundation, but upon many, and our President this afternoon in his review laid stress upon the close collaboration and the necessity for it in the future.

"The present Lord Mayor of the city is characterised by his devotion to civic duty. For a long time his idealism in civic matters has been carried to a point which places him on a pinnacle in regard to these matters. He said to-day in his civic welcome that he felt somewhat awkward in the presence of scientific men. I should like to assure him we are very human people."

The Lord Mayor of Leeds, in responding, said: "I am grateful for the very gracious words used in relation to the city. I appreciate very highly Sir Robert Robertson's reference to the wonderful hospitality of Leeds, which I think is magnificent, but what I couldn't quite understand was something he said about rivers. We have a river in Leeds—perhaps some of you have seen it. If not, I think you ought to inspect it, with a view to have it treated. I have had the advantage of tracing it to its source. If ever you have the chance of going to Malham, and seeing the beginnings of it, you will hardly believe it is the same river which passes through Leeds. It seems to have gathered a good many things in its progress. If you suffered from blindness, you would not be able to see it, but so long as your nasal organ is in good trim, you will discover it all right by walking near it. I don't consider it one of the beauties of Leeds, and I am sure you will forgive me if I just exempt the river

from the list of the beauties of the city of which we who live here are so proud. Who pollutes the river? Well, there may be somebody here from Bradford, and I have heard it said that although Bradford is not exactly on the river side, there is a possibility of matter from Bradford getting into the river. I don't think it all gets into the river as it passes Bradford—some gets in a little higher up nearer Skipton.

"I have often heard Leeds compared with Manchester, and I know quite a number of interesting instances in which Manchester and Leeds have competed. We do think sometimes that we will really have a ship canal to Leeds, so that we can compete with Manchester on a more equal footing.

"The President has said that Britishers are apt to produce too many queen bees. Personally I am very grateful that women are now asked to share the responsibility in the government of the city and the country. What are we going to do to mark the incoming of that tremendous change? I think that the fact that this city and all our towns are going to be governed by the women as well as the men is a remarkable development in the history of the country, and I am proud to be a Britisher in this particular, whether we have too many queen bees or not. In some parts of the world they are heading for far worse forms of government, whereas we in this country are marching steadily forward to the ideal government for the human race, and I am proud that I happen to be the Lord Mayor of this great city at a time when women and men are to share equally in its government.

"The development of cities brings with it a great need for collective life, and demands, in my judgment, an intensified collective consciousness. It needs a bigger man to say 'we' than it does to say 'I,' and it takes a very much bigger man to act 'we' than it does to act 'I.' If by any means we can help to develop the collective sense and collective enterprise, we ought to be proud. We want more private enterprise, so that we may have more collective enterprise. Our cities must not be asleep as corporate bodies while the citizens are struggling to develop the common life. Collectively we must be alive to provide the conditions which will make possible the developments that private enterprise is so anxious to bring about."

Professor HAROLD B. DIXON proposed "The University of Leeds." He said, "Mr. President, I have known the Leeds University in its various forms for more than fifty years. I knew it originally as the Yorkshire College of Sicence, which became famous not only throughout Yorkshire, but throughout the whole country, by the brilliant work of its staff. Just to mention only one instance—that wonderful symposium on coal written by five professors of the

Yorkshire College of Science. It was a scientific treatise with learning put readably that would be hard to equal. For those professors—and I had the privilege of knowing them all—were masters of their several Sciences, and they not only achieved a great fame in the country, but they persuaded practical Yorkshire to believe that just as Science had improved her industries, so it might be that her thought and feeling would be raised by the cultivation of the Arts in her midst. Hence Science joined hands with the Arts and the Yorkshire College began a career which has continued ever since, until it has culminated in the great and growing University of Leeds.

"But there were those of that generation who didn't altogether appreciate this equal union of the Arts and Sciences. I remember very well Huxley dealing with those pessimists. There are people, he said, who look on this scientific birth of our times as a sort of monster rising out of the sea with the purpose of devouring the Andromeda of the Arts. And now and then a would-be Perseus, equipped with the cap of invisibility, tries conclusions with the dragon of Science. I rather think Huxley thought that the real end of the story would be—in fact was, as Yorkshire now knows—the marriage of the dragon of Science and the Andromeda of Art, and perhaps we should look upon Perseus as a kind of liberator who cut off the shackles that bound Andromeda to the rock.

"It has been said that there is some kind of rivalry between Manchester and Leeds; I rather think there has been an *entente cordiale*. If we in the past gave to Leeds three distinguished chemists, Leeds has now repaid us with a brilliant physiologist. Everyone who knew the first Principal and Vice-Chancellor of Leeds, Professor Bodington, recognised that he bore great learning and urbanity like a garment. Many will remember Michael Sadler, whose spell seemed to have the power of reducing eloquence almost to the level of an exact science. I have not the privilige of knowing your present Vice-Chancellor. Of his academic Odysseys I can only beg the Muse to record 'how many are the men whose cities he has seen, and whose mind he has learnt.' But if we had to look for one who could hold the scales evenly between Science and the Arts, we might well find him in a philosopher who holds, with Hegel, that 'Reason is the essential nature of Reality,' or, if you prefer it, that 'Reality is the essential nature of Reason'—for philosophers applied the principle of the reversible equation long before chemists rediscovered it. I think I can quote one other Hegelian phrase that may appeal to him—that there is a logic inherent in the development of all human institutions: I presume also then in the development of the University of Leeds.

"I give you the toast of 'The University of Leeds' coupled with the name of the Vice-Chancellor."

Dr. J. B. Baillie, Vice-Chancellor of the University of Leeds, in responding, said: "First of all, may I express, on behalf of my colleagues here and of the University as a whole, our grateful appreciation of the very gracious terms in which Professor Dixon has proposed this toast, and to you all for the way you have received it?

"We are happy indeed to welcome the Chemical Society on its eighty-eighth birthday in this city. In Yorkshire at that age people just begin to be young, and we trust this is the beginning for you of a future of increased prosperity—financially and otherwise. For another reason, too, it is appropriate you should have come here, because this city is celebrated, amongst many other things, for having produced one of the founders of modern chemistry—Priestley. In Leeds you have an illustration of that close association between science and industry which I trust is to be in the future a characteristic of all the great industrial cities of the world. It may be said that the University represents the intellectual side of industry. I understand, Mr. President, that you, this afternoon, dealt with that fruitful and important subject, the alliance between science and industry. That is a topic which is constantly discussed in this area, and, indeed, it was largely the association of science and industry that started the University. I trust you laid stress upon the fact that the practical application of science is by no means easy. I have come to the conclusion that the practical application is in certain respects far more difficult than purely theoretical activity.

"We in the University are doing our best to advance the boundaries of chemical science. We have in our departments seven distinct sections of chemistry represented. We trust we are able to assist you as a Society as well as industry, which depends upon chemical science.

"After all, this science of chemistry is one of the oldest forms of curiosity in human history. It goes back certainly to the time of the Egyptians. It has stimulated not merely the intellectual curiosity, but the cupidity of mankind. Reputations have been won and lost, fortunes have been lost and found. This science has developed the resources of mankind in managing the forces of nature as few other sciences can be said to have done. The ingenuity displayed by you and conceived by you in trying to get to the heart of the material world awakens our admiration and wonder. Your success seems to depend on a peculiar combination of poetry, patience and penetration. How far you will go in the future no man can say. You have already done a very great deal for this country,

and I am satisfied that in the future you are destined to do much more."

Professor R. WHYTLAW GRAY gave the toast of "The Guests." He said: "It is a delightful duty to propose such an important toast. Other speakers, I think, have alluded to the fact that this is the first time the Chemical Society has taken its guests to Yorkshire. As I look round the tables, I must say I feel very proud and perhaps a little abashed at having to propose the health of so many bright stars. In such a constellation I derive comfort from the reflection that they are nearly all of the 'first magnitude.'

"First of all, I would offer a very cordial welcome to our two distinguished foreign representatives, Professor Einaar Biilmann and Professor Max Bodenstein. Professor Biilmann's activities range over wide fields of chemistry, and among his later investigations I may mention his important work on hydro-electrodes, which has had far-reaching consequences and added to his great reputation as a physical chemist. He has also been an active worker in international chemistry. Professor Bodenstein is one of the great outstanding figures of the world in physical chemistry, and our Society is to be congratulated on having at this dinner so distinguished a representative from the German Chemical Society.

"We have here to-night nearly every shade of chemical activity represented—pure and applied. We have Dr. Herbert Levinstein—and all chemists will recall the great part played by his father—and also Mr. Cyril Eastman and Mr. E. Hinks. We are also delighted to have with us the Lord Mayor of Leeds, and everyone will extend a hearty welcome to Col. Bousfield, Col. Tetley, and others whom it is our privilege to entertain."

Professor BIILMANN, in responding, said: "Mr. President, My Lord, ladies and gentlemen, I shall have the very great honour to reply to the toast of the guests. In the first place, I must thank the Chemical Society and our British colleagues for the very kind invitation to come to Leeds and attend this annual meeting and this Dinner here to-night. In the second place, I wish to thank Professor Whytlaw Gray for the very charming way in which he has proposed the toast of the health of all the guests, including myself.

"The Chemical Society, if I am allowed to say so, is a little like the moon. Every month a new moon shines on the earth, and every month a new number of your Journal shines in our laboratories all round the world and tells us what you are doing in chemistry here in old England. And even a chemist who has never had the luck to visit England knows a great deal not only about chemistry but also about English chemists, if he reads that Journal of yours. But just

as we only know one side of the moon, and have never seen the other, so in your Journal only one side of our English colleagues presents itself to us, and of course we are very eager to see the other side of you as well, and to do so you have given us the most excellent opportunity here in Leeds.

"I think some people might ask, What is the use of such an annual dinner? But they only ask because they have not read the old philosophers as they should have done. But we remember that Democritus, the old philosopher, one of the parents of the atomic theory—yes, Democritus himself said that life without feasts is like a highway without inns. And so we, the chemists, the true pupils of the old man Democritus, we know the use of personal meeting as here between colleagues, personal exchange of views, personal friendship between men of science, and of personal mutual confidence and intimacy, which is so natural to men of science, regardless of nationality, because science itself is international—the most international thing of all, the quintessence of internationality. There is certainly positive affinity for international co-operation between all chemists, and I hope that the International Union may be a good catalyst for this reaction, so that the natural state of equilibrium may be established. But although science itself is international, all of us belong to a nation and bear the impress of our nationality, and we wish to do so, I do so, and you do so, and we wish to honour our country through the work we do. Not only that, but all of us wish to decide what we shall do, which problem we shall treat, and we will never allow anybody to tell us that we ought to do other things than those we care to do. Only so can we make good science. If anyone comes and wants to organise our personal scientific work, we may reply to him in the words of my famous countryman, Hamlet, Prince of Denmark: 'You would play upon me . . . as on a pipe; . . . you would seem to know my stops. . . . Call me what instrument you will, though you can fret me, you cannot play upon me.'

"Yet our science is international, and we all pursue the same end. We are like those men who, having to make a tunnel through a mountain, start from opposite sides: from north and south they break their way through the darkness of the mountain, quite certain to meet each other in the depths of the rocky mass. Why so certain? Because they took bearing of the stars far, far away. And the same we do, taking bearing by the stars of natural science, the truth far away from opinions which change every day.

"Surely life in the chemical laboratory makes a man modest regarding the importance of his personal opinions. Every day's experimental work tells him that 'there are more things in heaven and earth than are dreamt of in our philosophy'—if I may quote again Prince Hamlet.

"But I have to come back to our hosts. I said just now that all of us wish to honour our own country by our work. In London, in the Tate Gallery, I saw a picture by Millais, showing an old sailor sitting with maps of the polar region and studying how to pass them. On the frame are carved these words: 'It might be done, and England should do it.' I think the same words are carved in your minds when you treat problems of our science, and I wish luck to the English chemists in their work for the progress of chemistry and for the honour of their country.

"I beg my fellow guests to drink together with me to the honour of the English chemists and the Chemical Society."

Professor MAX BODENSTEIN also briefly responded to the toast, and expressed his pleasure at being present in the industrial and musical city of Leeds. He emphasised the common interest between scientific people the world over, and the friendship that existed between them. He trusted that these good relationships would be fostered and encouraged in the future.

The dinner concluded with the singing of the National Anthem.

PEDLER LECTURE.

The first Pedler Lecture will be delivered by Professor W. H. Perkin, Sc.D., LL.D., F.R.S., on Thursday, May 30th, 1929, at 5.30 p.m., the title of his lecture being "The Early History of the Synthesis of Closed Carbon Chains." The lecture will be given in the Meeting Hall of the Institution of Mechanical Engineers, Storey's Gate, St. James's Park, S.W. 1. Tickets of admission will not be required.

LIST OF FELLOWS FOR 1929.

It has been decided to publish the List of Fellows for 1929, and to supply it to those Fellows who make application before August 31st, 1929. In order that the new List may be as complete as possible, Fellows are asked to notify the Assistant Secretary of any change of address or other alteration before the end of July.

RESEARCH FUND COMMITTEE MEETING.

A meeting of the Research Fund Committee will be held next June. Applications for grants, to be made on forms obtainable from the Assistant Secretary, Chemical Society, Burlington House, Piccadilly, London, W. 1, must be received on or before Saturday, June 1st.

All those who received grants in June 1928, or in June of any previous year, whose research grant accounts have not been closed by the Council, are reminded that their reports must be returned to the Assistant Secretary by June 1st.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. I. Chemische Methoden. Teil 2, 2 Hälfte. Heft iii. Berlin 1929. pp. 1969 to 2148.

From the Publishers: Herren Urban & Schwarzenberg.

BAYLEY, THOMAS. A pocket book for chemists, chemical manufacturers, metallurgists, dyers, distillers, brewers, sugar refiners, photographers, students, etc. 9th edition. Edited by ROBERT ENSOLL. London 1929. pp. xvi + 460. (*Reference.*) 8*s.* 6*d.* net.

From the Publishers: Messrs. E. & F. N. Spon.

BRIGGS, DENNIS BROOK. Chemical analysis, qualitative and quantitative. London 1928. pp. viii + 144 + 135. ill. 6*s.* net. (*Recd.* 27/3/29.)

—— Qualitative analysis. London 1928. pp. viii + 144. 3*s.* 6*d.* net. (*Recd.* 27/3/29.) From the Author.

CONSTABLE, FREDERICK HURN. A concise summary of elementary organic chemistry. London 1929. pp. xiv + 149. 4*s.* 6*d.* net. (*Recd.* 22/3/29.) From the Publishers: Messrs Methuen & Co.

FALCIOLA, PIETRO. Trattato di chimica analitica qualitativa. Vol. I. Milano 1929. pp. xx + 512. *L.* 75. (*Recd.* 16/4/19.)

From the Publishers: Soc. An. Istituto Editoriale Scientifico.

MENSCHUTKIN, NIKOLAI ALEXANDROVICH. Analytical chemistry. 15th edition. Moscow 1929. pp. 528. ill. [In Russian.] (*Recd.* 9/4/29.) From Professor B. N. Menschutkin.

II. *By Purchase.*

CURTIS, C. A. Künstliche organische Pigmentfarben und ihre Anwendungsgebiete. Berlin 1929. pp. vii + 230. *M.* 24. (*Recd.* 21/3/29.)

JANDER, G. and PFUNDT, O. Die visuelle Leitfähigkeitstitration und ihre praktischen Anwendungen. (Die chemische Analyse. Vol. XXVI.) Stuttgart 1929. pp. viii + 64. ill. (*Reference.*) *M.* 8.80.

MANTELL, CHARLES LETNAM. Industrial carbon. New York 1928. pp. x + 410. ill. 21*s.* net. (*Recd.* 5/4/29.)

MECKE, REINHARD. Bandenspektra und ihre Bedeutung für die Chemie. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XX.) Berlin 1929.

SOMMERFELD, ARNOLD. Atombau und Spektrallinien. Wellenmechanischer Ergänzungsband. Braunschweig 1929. pp. x + 352. ill. *M.* 14.50. (*Recd.* 21/3/29.)

UNITED STATES. *Institute for Government Research.* The Bureau of Chemistry and Soils, its history, activities and organization. By GUSTAVUS A. WEBER. Baltimore 1928. pp. xii + 218. 7*s.* net. (*Recd.* 20/3/29.)

III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Pamphlet No. 10. The health and nutrition of animals. Reports by SIR ARNOLD THEILER and JOHN BOYD ORR. Melbourne 1929. pp. 76.

HENDRICK, JAMES. Some notes on the conditions of nitrification. (From the *Proc. Papers 1st Int. Cong. Soil Sci.*, 1927, **3**.)

HENDRICK, JAMES, and NEWLANDS, GEORGE. The mineral composition of the soil as a factor in soil classification. (From the *Proc. Papers 1st Int. Cong. Soil Sci.*, 1927, **4**.)

HENDRICK, JAMES, and WELSH, H. D. The substances removed by the drainage from a Scottish soil. (From the *Proc. Papers 1st Int. Cong. Soil Sci.*, 1927, **2**).

LOZANIĆ, S. M. Numerical regularities in the atomic weights of elements. (From the *Bull. Int. Acad. Sci. Bohême*, 1928.)

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 51. The testing of explosives for use in fiery coal mines. London 1929. pp. 50 + 5 plates.

NEWLANDS, GEORGE. Scottish soil types with special reference to Northeast Scotland. (From the *Proc. Papers 1st Int. Cong. Soil Sci.*, 1927, **4**.)

PEREIRA, ARTUR CARDOSO. A vida e a obra de M. Berthelot. (From the *Rev. Quím. Pura e Applicada*, 1928.) ill.

—— A obra e a vida de James Marsh. (From the *Arch. Inst. Med. Legal, Lisboa*, 1929, Series B, **3**.) ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH. Department of. *Engineering Research.* Special Report No. 12. Lanoline rust preventers. By C. JAKEMAN. London 1929. pp. iv + 22. ill.

—— —— Special Report No. 15. Properties of materials at high temperatures. V. The "creep" strength of a "high nickel–high chrominm steel," between 600° C. and 800° C. By HERBERT JAMES TAPSELL and J. REMFRY. London 1929. pp. iv + 7. ill.

—— *Fuel Research.* Physical and chemical survey of the national coal resources, No. 14. Description of the coalfields of North Staffordshire. London 1929. pp. vi + 16.

—— *Gas Cylinders Research Committee.* Ordinary commercial cylinders for the "permanent" gases: summary of recommendations (revised). London 1929. pp. iv + 7. ill.

PUBLIC LIBRARY
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DETROIT

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Extra Meeting held at the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1., on Thursday, April 25th, 1929, at 5.30 p.m., the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

After a brief introduction dealing with the life and work of Professor Theodore W. Richards, the PRESIDENT called upon Sir Harold Hartley to deliver the Theodore W. Richards Memorial Lecture.

At the conclusion of the lecture, a vote of thanks to the Lecturer was proposed by Professor Arthur Smithells, seconded by Professor T. M. Lowry, and carried with acclamation, Sir Harold Hartley making acknowledgment.

Ordinary Scientific Meeting, Thursday, May 2nd, 1929, at 8 p.m., the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Thomas B. Osborne (Honorary Fellow)	March 7th, 1912.	Jan. 20th, 1929.
John Doull	Dec. 7th, 1905.	Jan. 22nd, 1929.
Ernest Francis Ehrhardt	June 6th, 1887.	April 20th, 1929.
Harold J. Hailstone	Dec. 15th, 1921.	April 4th, 1929.
Charles James	Feb. 15th, 1912.	Dec. 10th, 1928.
Herbert B. Stocks	Nov. 17th, 1887.	Feb. 7th, 1929.
John Tomlinson	May 5th, 1927.	March 3rd, 1929.

Certificates were read for the first time in favour of :

Charles Alfred Allgood, St. George's Hospital, Hyde Park Corner, S.W. 1.
Leslie Herbert Angus, M.Sc., The Cottage, Market Bosworth, Nuneaton.
Knowles Edge, B.A., Ribble Lodge, Lytham, Lancs.
Howard Ernest Goodson, A.R.C.S., A.I.C., 7, Brentwood Grove, Armley, Leeds.

Gwilym Owen Griffiths, B.Sc., 40, Rating Row, Beaumaris, Anglesey.
Walter Reginald Hunt, 21, Sandy Lane South, Wallington.
Alexander Leicester McAulay, Prof., M.A., Ph.D., B.Sc., University of Tasmania, Hobart, Tasmania.
Harry Gordon Poole, M.Sc., Waite Agricultural Research Institute, Glen Osmond, Adelaide, South Australia.
Alan Richard Powell, Red Roofs, Sycamore Road, Amersham, Bucks.
John Roberts, Arley House, Bracondale, Norwich.
Alice Mary Robinson, B.Sc., 4, Arkleigh Mansions, Hendon, N.W. 4.
Archibald Affleck West Russell, B.A., B.Sc., 3, Woburn Square, W.C. 1.
William Russell-Smith, 1, Aubert Park, Highbury, N. 5.
Ralla Ram Seth, B.Sc., Sheo-Asharam, Delhi, India.
Harold Taylor, 161, St. James's Road, Blackburn.
Leslie Walter Tiller, B.Sc., 39, Waimea Road, Nelson, New Zealand.
Jugatram Shankerprasad Vaidya, Zandu Pharmaceutical Works, Ltd., Sayani Road, Dadar, Bombay, India.
Harold Walmsley, 11, St. Stephens Road, Lewisham, S.E. 13.

The following certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

Pauchapagesa Krishnamurthy, M.A., 210, Bowbazar Street, Calcutta, India.
André Meyer, Prof., D.-ès-Sc., 3, Rue Docteur-Maret, Dijon, France.

Dr. E. H. Farmer and Mr. S. H. Woolhouse were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows:

John Norman Aldington, B.Sc.
Hla Baw, B.Sc.
Jack Bloom, B.Sc.
Rupert Woolby Brooke.
Francis Alan Butt.
Lawrence Harvey Cook, A.M.
Robert Neil Cunningham, B.Sc.
Masao Fukuda.
James Galloway.
Constance Higginbottom, M.Sc.
Andrew Home-Morton, M.Inst.C.E., M.I.Mech.E., M.I.E.E.
John Lloyd Jones, B.A., B.Sc.
Dadabhoy Maneckshaw Karkhanavala.
Andrew Kent, M.A., B.Sc.
John Craven Laycock.
Margaret Augusta Leishman, B.A., B.Sc.
William Rowe Littlejohn, B.Sc.
William George Moffitt, B.Sc.
Sokichi Nakanishi.
Birendra Lal Nandi, M.Sc.
Eiji Ochiai.
Stuart Wortley Pennycuick, D.Sc.
Thomas Moore Ridley.
Frank Albert Royle, M.Sc., Ph.D.
Leopold Ruzicka, Dr. Ing.
Charles Gordon Smith, M.Sc.
Bernard Thomas Dudley Sully, B.Sc., A.R.C.S., A.I.C.
Andrew Theodore Sumner, B.Sc.
Masanobu Terasaka.
Leonard Noel Tyrrell.

The following papers were read:

"The volatility and structures of the azides and aliphatic diazo-compounds." By N. V. Sidgwick.

"The unsaponifiable matter from the oils of elasmobranch fish. Part V. The constitution of squalene as deduced from its degradation products." By I. M. Heilbron, W. M. Owens, and I. A. Simpson.

"The unsaponifiable matter from the oils of elasmobranch fish. Part VI. The constitution of squalene as deduced from a study of the decahydrosqualenes." By I. M. HEILBRON and A. THOMPSON.

"Catalytic influences in three-carbon tautomerism. Part I. Sodium alkyloxides." By G. A. R. KON and R. P. LINSTEAD.

"Studies in the sterol group. Part III. The acetylation and catalytic hydrogenation of ergosterol." By I. M. HEILBRON and W. A. SEXTON.

"Studies in the sterol group. Part IV. The existence of isomeric naturally occurring ergosterols." By I. M. HEILBRON, W. A. SEXTON, and F. S. SPRING.

"Styrylpyrylium salts. Part XI. The determination of the reactive group in ketones of the type $CH_3 \cdot CO \cdot CH_2R$ by means of the benzo-β-naphtha*spiro*pyran colour change." By I. M. HEILBRON and F. IRVING.

Ordinary Scientific Meeting, Thursday, May 16th, 1929, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

Reference was made to the loss sustained by the Society, through death on March 31st, of Henry Edward Aykroyd, who was elected a Fellow on December 3rd, 1896.

The PRESIDENT announced that, accompanied by the Senior Secretary, he had attended a "Besondere Sitzung" of the German Chemical Society held in the "Hörsaal" of Hofmann House, Sigismundstrasse 4, Berlin at 7 p.m. on the evening of May 6th, and had presented the copy of the "Muspratt" portrait of von Liebig which had been painted at the request of the Council by Mr. G. A. Pownall. In making the presentation he said:

"Herr Präsident, meine Damen und Herren. Während der Liebig-Wöhler-Feier in Darmstadt im Juli des vorigen Jahres wurde auf der Bühne des Versammlungssaales ein von Trautschold gemaltes Bildnis Justus von Liebig's ausgestellt. Dieses Bildnis, welches von der Englischen Chemischen Gesellschaft geliehen war, wurde der Gesellschaft durch Frau Alec Tweedie, einer Patin Justus von Liebig's geschenkt.

"Frau Alec Tweedie's Mutter, geborene Emma Muspratt, war nämlich mit dem berühmten Chemiker sehr befreundet—um ihr das Leben zu retten soll von Liebig zuerst seinen Hühnerfleisch Extract bereitet haben. Das Porträt wurde Fräulein Emma Muspratt gelegentlich ihrer Vermählung mit Dr. Harley in 1860 gegeben.

"Da das andere Trautscholdsche Porträt Justus von Liebig als älteren Mann darstellt, während er im Muspratt'schen Bildnis in der Blüte des Mannesalters erscheint, hat die englische Chemische Gesellschaft durch einen hervorragenden Künstler eine Kopie dieses Bildes herstellen lassen.

"Mit dem grössten Vergnügen überreiche ich nun, Herr Präsident, diese Kopie im Namen des Vorstandes und der Mitglieder der englischen Chemischen Gesellschaft der deutschen Schwester Gesellschaft, nicht nur im Andenken an einen weltberühmten Deutschen, durch dessen Lebenswerk unsere ganze Kultur bereichert wurde, sondern auch als Zeichen der Hochschätzung und der Ehre, welche sein Name in allen Zweigen des chemischen Berufs in Grossbritannien geniesst."

The President of the German Chemical Society (Geheimrat Professor Dr. H. Wieland) asked the President to convey to the Council and Fellows of the Chemical Society the sincere thanks of the German Chemical Society for their most-welcomed gift which it would treasure among its most valued possessions. He regarded it as an expression of international friendship and goodwill which they wished most heartily to reciprocate.

The following were formally admitted Fellows of the Chemical Society: A. Herbert Spong, Allan Domleo, James G. Fife, and R. Neil Cunningham.

Certificates were read for the first time in favour of:

Albert Charles Chibnall, M.A., Ph.D., Cedar House, Chiswick, W. 4.
James Gerald Crowther, Oxford University Press, Falcon Square, E.C. 1.
Herbert Tasman Davies, Arcana, High Salvington, Worthing.
Kin Kin Gyi, B.A., 4, Fairfax Mansions, Swiss Cottage, N.W. 3.
John Arthur Hetherington, B.Sc., 57, Durham Road, Blackhill, Co. Durham.
George Berthold Loeffler, Springside, Gorey, Jersey.
Shigehiko Sugasawa, Chemical Department, University College, Gower Street, W.C. 1.
Hubert Bradford Vickery, B.A., M.Sc., Ph.D., Connecticut Agricultural Experiment Station, New Haven, Connecticut, U.S.A.

The following papers were read:

"The dissociation constants of organic acids. Part I. The primary dissociation constants of some alkyl malonic acids." By A. I. Vogel.

"The dissociation constants of organic acids. Part II. The primary dissociation constants of some cyclic 1 : 1-dicarboxylic acids." By A. I. Vogel.

"The properties of nicotine and its derivatives. Part I. Molecular extinction-coefficients." By T. M. Lowry and W. V. Lloyd.

"The properties of nicotine and its derivatives. Part II. Optical rotatory power and rotatory dispersion." By T. M. LOWRY and W. V. LLOYD.

"Investigations on the dependence of rotatory power on chemical constitution. Part XXXIV. Borotartaric acid." By S. G. BURGESS and H. HUNTER.

LIST OF FELLOWS FOR 1929.

It has been decided to publish the List of Fellows for 1929, and to supply it to those Fellows who make application before August 31st, 1929. In order that the new List may be as complete as possible, Fellows are asked to notify the Assistant Secretary of any change of address or other alteration before the end of July.

HARRISON MEMORIAL PRIZE

The Prize, of the value of about £150, is to be awarded to the chemist of either sex, being a natural born British subject and not at the time over thirty years of age, who, in the opinion of the Selection Committee, during the previous five years has conducted the most meritorious and promising original investigations in any branch of pure or applied chemistry and published the results of those investigations in a scientific periodical or periodicals.

Provided that, in the opinion of the Selection Committee, there is a candidate of sufficient distinction to warrant an award of the Prize, the next award is to be made in December, 1929.

Applications, five copies of which must be submitted, should contain the following information:

(*a*) Name (in full).
(*b*) Age (birth certificate to accompany application).
(*c*) Degrees (name of University where obtained).
(*d*) Other qualifications.
(*e*) Experience.
(*f*) Titles of published papers, with authors' names, including full references to publication.
(*g*) Where research was carried out.
(*h*) Testimonials or references.
(*i*) Any other information bearing on the application.

The Selection Committee is prepared to receive applications, nominations, or information as to candidates eligible for the Prize.

Any such communication must be received by the President, The Chemical Society, Burlington House, Piccadilly, London, W. 1, not later than Monday, December 2nd, 1929.

List of Papers, or Abstracts thereof, received between March 7th and May 16th, 1929. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"The viscosity of iodine–potassium iodide solutions." By F. V. DAVIS.

"The action of thionyl chloride on alcohols in the presence of pyridine." By D. E. LADHAMS.

"The effect of gases on the electric charges developed by heated metals." By D. H. BANGHAM and D. R. LEWIS.

"Organic derivatives of silicon. Part XXXIX. The action of sodium on phenoxychlorosilicanes." By R. A. THOMPSON and F. S. KIPPING.

"Organic derivatives of silicon. Part XL. Attempts to prepare unsaturated compounds from phenyl silicon trichloride." By F. S. KIPPING, A. G. MURRAY, and (in part) J. G. MALTBY.

"The effect of a gas upon the pressure of a vapour." By L. A. SAYCE and H. V. A. BRISCOE.

"The dissociation constants of organic acids. Part I. The primary dissociation constants of some alkyl malonic acids." By A. I. VOGEL.

"Studies in complex salts. Part II. The preparation, properties, and stability of some bisdicarboxylate copper salts." By H. L. RILEY.

"The effect of gases on the colour of iodine vapour, and the solvent action of various vapours on solid iodine." By R. WRIGHT and T. MCGREGOR.

"On the modifications of galactose." By C. N. RIIBER, J. MINSAAS, and R. T. LYCHE.

"The Walden inversion. Part II." By H. N. K. RÖRDAM.

"The decomposition of carbon monoxide in the silent electric discharge. Part III." By R. W. LUNT and L. S. MUMFORD.

"Cobalt with a co-valency of four. A new series of complex compounds." By E. G. V. PERCIVAL and W. WARDLAW.

"Nicotine tetrachloroiodide." By F. D. CHATTAWAY and G. D. PARKES.

"*N*-Methyl derivatives of 2-phenylnaphthylene-1 : 3-diamine." By W. S. KENTISH.

"The production of pinacols in the reaction between a carboxylic ester and a Grignard reagent." By H. H. HATT.

"Isatin anil. Part I. The isomerism of isatin-2-anil." By R. K. CALLOW and E. HOPE.

"A wandering of the acyl group in partially acylated phenolic compounds. Part II. Synthesis of anthragallol 1 : 2- and 1 : 3-dimethyl ethers." By A. G. PERKIN and C. W. H. STORY.

"The mechanism of tautomeric interchange and the effect of structure on mobility and equilibrium. Part IV. Further evidence relating to the mechanism of acid catalysis in the mutarotation of nitrogen derivatives of tetra-acetylglucose." By J. W. BAKER.

"The product of the reaction between ammonium thiocyanate and nitric acid." By P. L. ROBINSON and W. E. SCOTT.

"The production of kojic acid from pentoses by *Aspergillus Oryzæ*." By F. CHALLENGER, L. KLEIN, and T. K. WALKER.

"The properties of the chlorides of sulphur. Part II. Molecular extinction coefficients." By T. M. LOWRY and G. JESSOP.

"10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part IX. The synthesis of nitromethyldiphenylamine-6'-arsinic acids and their conversion into nitromethyl derivatives of 10-chloro-5 : 10-dihydrophenarsazine. Constitution of 10-chloro-5 : 10-dihydrophenarsazine." By C. S. GIBSON and J. D. A. JOHNSON.

"The constitution of the red isomeride of creatinine picrate responsible for Jaffé's colour reaction." By W. K. ANSLOW and H. KING.

"New polynuclear co-ordination compounds of cobalt." By E. G. V. PERCIVAL and W. WARDLAW.

"The isomerism of derivatives of 2-phenylnaphthylene-1 : 3-diamine." By M. S. LESSLIE and E. E. TURNER.

"The mobility of symmetrical triad prototropic systems. Part V. A new triad system (methyleneazomethine)." By C. K. INGOLD and C. W. SHOPPEE.

"Influence of poles and polar linkings on tautomerism in the simple three-carbon system. Part II. Some bis-quaternary $\alpha\gamma$-propenylenediammonium salts." By C. K. INGOLD and E. ROTHSTEIN.

"The parachor and chemical constitution. Part XII. Fused metals and salts." By S. SUGDEN and H. WILKINS.

"Tertiary phosphines containing the higher alkyl radicals." By W. C. DAVIES, P. L. PEARSE, and W. J. JONES.

"The photolysis of potassium ferrioxalate solutions. Part I. Experimental." By A. J. ALLMAND and W. W. WEBB.

"The photolysis of potassium ferrioxalate solutions. Part II. Discussion." By A. J. Allmand and W. W. Webb.

"Potassium hexathionate." By J. R. Partington and A. F. Tipler.

"Ethylene dimercaptan and 1 : 3-dithian." By D. T. Gibson.

"The isomeric monohydroxyphenylalanines. Part I. A new synthesis of the ortho- and meta-isomerides and a comparison of their properties with those of tyrosine." By W. P. Dickinson and P. G. Marshall.

"Nitrofurfuraldehyde." By H. J. Stern.

"The application of the Guareschi reaction to quinones. Part I. Benzoquinone." By R. Craven.

"The parachor and chemical constitution. Part XIII. Some compounds of titanium and tin." By F. B. Garner and S. Sugden.

"The nitrosation of phenols. Part VI. Further study of the nitrosation of *m*-chlorophenol." By H. H. Hodgson and A. Kershaw.

"A micro-method for determining semicarbazones and its application to the analysis of ketones." By R. P. Hobson.

"Note on the bromination of coumarin." By D. M. Williams.

"The adsorption of fumaric and maleic acids by pure charcoals." By H. J. Phelps.

"The formation and stability of the 2-thio-1 : 2-dihydrobenz*iso*-thiazoles." By E. W. McClelland, L. A. Warren, and J. H. Jackson.

"Acid and salt effects in catalysed reactions. Part XX. The ionisation of acids in salt solutions." By H. M. Dawson and W. Lowson.

"The chemistry of the caryophyllene series. Part II. Clovene and *iso*clovene." By G. G. Henderson, R. O. O. McCrone, and J. M. Robertson.

"Investigations on the bivalency of carbon. Part II. The displacement of chlorine from desyl chloride. Benzoin diethylacetal." By A. M. Ward.

"Studies of valency. Part XIII. Further experiments on the molecular structure of the quadrivalent derivatives of tellurium." By T. M. Lowry and F. L. Gilbert.

"The chemistry of the three-carbon system. Part XXI. Some *cyclo*heptane compounds." By W. E. Hugh, G. A. R. Kon, and T. Mitchell.

"The influence of ethyl ether and of dimethylpyrone on the availability of hydrogen chloride in alcoholic solution." By V. E. S. Mitchell and J. R. Partington.

"1-Methoxy-derivatives of thioxanthone." By K. O. ROBERTS and S. SMILES.

"The relationships between hydrogen chloride and the chlorides of sulphur. Part I. Freezing points of the system hydrogen chloride–sulphur monochloride." By H. TERREY and H. SPONG.

"Note on a possible source of error in the capillary tube method of measuring surface tension." By S. TOLANSKY.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, JUNE 20th, 1929.

ALLGOOD, CHARLES ALFRED, St. George's Hospital, Hyde Park Corner, S.W. 1. Chief Pharmacist to St. George's Hospital. Member of the Pharmaceutical Society of Great Britain. Teacher of Practical Pharmacy to St. George's Hospital Medical School. (*Signed by*) Charles Alex. Hill, John W. Heath, Edward A. Andrews.

ANGUS, LESLIE HERBERT, The Cottage, Market Bosworth, Nuneaton. British. Science Master. M.Sc., Leeds, 1925. I wish to keep in touch with the developments of chemistry through the Society's publications. Research experience in the Department of Physical Chemistry, University of Leeds. (*Signed by*) H. M. Dawson, W. Lowson, C. W. Shoppee, H. Burton.

CHIBNALL, ALBERT CHARLES, Cedar House, Chiswick Mall, W. 4. British. Hon. Assistant, Biochemical Dept., University College, London. M.A. (Cantab.); Ph.D. (London). Papers dealing with the protein and fat metabolism of green leaves published in the *Biochemical Journal* and *Journal of Biological Chemistry*. (*Signed by*) C. S. Gibson, J. C. Drummond, Paul Haas.

CRIGHTON, DAVID ANDREW, 51, Dalmeny Road, Tufnell Park, N. 7. British. Temporary Assist. Chemist, Govt. Chem. Lab., London. B.Sc. (2nd Class Honours Chemistry), Edinburgh University. Student at Edinburgh University for four years (October 1924 to June 1928). Graduated June, 1928. Became Temporary Assistant Chemist, Govt. Chem. Lab., London, on 1st November, 1928. (*Signed by*) Robert Robertson, Geo. Stubbs, J. J. Fox.

CROWTHER, JAMES GERALD, c/o Oxford University Press, Falcon Square, E.C. 1. British. Publisher's Assistant. Author of "Science for You" (Routledge). Scientific Correspondent to the *Manchester Guardian*. (*Signed by*) N. V. Sidgwick, A. Robertson, N. K. Adam.

DAVIES, HERBERT TASMAN, "Arcana," High Salvington, Worthing, Sussex. British. Metallurgical Chemist. Certificate Metallurgy, Melbourne University. Student, Berkeley University, California. Manager, Gindalbie Gold Mines, W. Australia. Exploring Party South Sea Islands, also in Rocky Mountains, Canada. Reporting and Erection of Metallurgical Plant, New Zealand. At present running Analytical and Research Laboratory, 34, Queen Street, Hammersmith, W. 6. (*Signed by*) A. M. Low, S. H. Jones, A. H. Stevens.

EDGE, KNOWLES, Ribble Lodge, Lytham, Lancs. British. Manufactur-

ing Chemist (Director of Company). B.A. (Cantab.), 1st Class Applied Chemistry, June, 1925. Technical Director and Head of Research Dept. of Wm. Edge & Sons, Ltd., Manufacturing Chemists, Bolton. (*Signed by*) J. Harold Edge, G. T. Morgan, D. D. Pratt.

EVANS, DAVID LLOYD EMRYS, 10, Victoria Square, Aberdare. British. Pharmist. M.P.S. Desirous of availing himself of the use of the library. (*Signed by*) D. Hughes, J. Macvie Hill, Geo. A. Turner.

GOODSON, HOWARD ERNEST, 7, Brentwood Grove, Armley, Leeds. English. Lecturer in Chemistry. Diplomas: Associate, Royal College of Science, London (A.R.C.S.). Associate, Institute of Chemistry (A.I.C.). Chief Lecturer since 1920 at the Technical College, Leeds, in the Department of Chemistry. From 1916 to 1919 engaged in analytical work in the high-explosives section of the Department of Chemical Inspection at Woolwich Arsenal. (*Signed by*) S. Parrish, W. P. Wynne, James C. Philip, M. A. Whiteley, R. Gawler.

GRIFFITHS, GWILYM OWEN, 40, Rating Row, Beaumaris, Anglesey. British. Teacher of Chemistry. B.Sc. (Wales), 1st Class Honours, 1922. Science Master at the Grammar School, Beaumaris, from 1924 to date. (*Signed by*) Kennedy Orton, A. E. Bradfield, H. B. Watson, Brynmor Jones.

GYI, (Miss) KIN KIN, 4, Fairfax Mansions, Finchley Road, Swiss Cottage, N.W. 3. Burmese. Student Teacher. B.A. Chemistry, Burma University. (*Signed by*) L. W. Townsend, J. W. Cook, F. H. Burstall.

HAMILTON, GEORGE MONTY, 9, The Green, Twickenham, Middlesex. British. Research Chemist. B.Sc. (London); M.Sc. (London). Research for M.Sc. (two years), Birkbeck College, London. Research (fourteen months) with Research Association of British Paint, Colour, and Varnish Manufacturers (Teddington). (*Signed by*) J. Outram Cutter, Samuel Sugden, Louis Arnold Jordan.

HENTHWAITE, JOHN STEPHEN, Canadian Celanese, Ltd., Drummondville, Quebec, Canada. English. Works Chemist at present in the employment of British Celanese, Ltd. Ex-service student at the University of Leeds. (*Signed by*) Arthur Smithells, W. Lowson, H. M. Dawson, R. B. Forster, A. G. Perkin.

HETHERINGTON, JOHN ARTHUR, 57, Durham Road, Blackhill, Co. Durham. British. Research Scholar, Durham University (Durham Division). B.Sc., Durham (1st Class Hons.). Am carrying out research at Durham, and wish to devote myself to investigation. (*Signed by*) Irvine Masson, H. V. A. Briscoe, G. H. Christie.

HILL, HENRY ROWLAND, 2, Beeches Walk, Carshalton, Surrey. British. Chemist and London Manager to The British Gas Purifying Materials Co., Ltd. B.A., chemistry, Oxford. For some time Assistant Works Chemist to Messrs. H. J. Enthoven & Co. (lead refiners). Analytical and research work in connection with coal-gas purification and particularly the treatment of English iron ore for this purpose. "The Interaction of Diazonium Salts and Phenols," by F. D. Chattaway and H. R. Hill, *J.C.S.*, 1922, **121**, 2756. (*Signed by*) F. L. Garton, Harold Heron, F. D. Chattaway.

HUNT, WALTER REGINALD, "Kenilworth," 21, Sandy Lane, South Wallington, Surrey. British. Student of Chemistry and Chemical Dealer. Student of chemistry as applied to laundry materials. Dyeing. (*Signed by*) S. P. Schotz, Eric C. Pickering, Charles Dorée.

LOEFFLER, GEORGE BERTHOLD, "Springside," Gorey, Jersey, C.I. Canadian citizen, Manufacturing Chemist. M.P.S. (Gt. Britain). Object in desiring admission to the Chemical Society is to attend the meetings and

follow up the publications of the Society, and to have the use of the Library. (*Signed by*) F. W. Toms, E. J. Woodcock, G. Cofman-Nicoresti.

McAULAY, ALEXANDER LEICESTER, University of Tasmania, Hobart, Tasmania, Australia. British. Professor of Physics. M.A. (Cantab.); Ph.D. (Manchester); B.Sc. (Tas.); F.Inst.P. Papers on Physical Chemical subjects (overpotential and corrosion) (*J.C.S.*, 1925; *Proc. Roy. Soc.*, Feb. 1926; *Phil. Mag.*, June 1926; *Nature*, Aug. 4, 1928; *J.C.S.*, 1929). "An Investigation of the Effect of Differential Aeration on Corrosion by means of Electrode Potential Measurements" (*J.C.S.*, **127**, 1925), McAulay and Bowden. (*Signed by*) Ulick R. Evans, R. G. W. Norrish, Guy D. Bengough.

POOLE, HARRY GORDON, Waite Agricultural Research Institute, Glen Osmond, Adelaide, South Australia. British. Assistant Chemist under Prof. J. A. Prescott. M.Sc. (Melbourne); A.A.C.I. Two years' research in organic chemistry at Melbourne University. Joint or independent author of papers below. At present soil research under Commonwealth Council for Scientific and Industrial Research. *J.C.S.*, 1927, 1122, 2661; 1928, 1378, 1616. (*Signed by*) J. A. Prescott, E. J. Hartung, A. C. D. Rivett.

POWELL, ALAN RICHARD, "Red Roofs," Sycamore Road, Amersham, Bucks. British. Research Chemist. Analytical Chemist with Messrs. G. T. Holloway & Co., Ltd., 1913–1918; Chief Research Chemist to Messrs. Johnson, Matthey & Co., Ltd., 1918 to date. Publications: "Determination of Tin in Wolfram Ores," *J.S.C.I.*, 1918, **37**, 285. Papers on the Determination of Nickel and Cobalt [with Dr. W. R. Schoeller], *Analyst*, May 1916, June 1917, August 1919. Papers on the Analytical Chemistry of Tantalum, Niobium, and their Mineral Associates, *J.C.S.*, 1921, 119, 1927; *Analyst*, 1925, **50**, 485; 1928, **53**, 258; *Z. anorg. Chem.*, 1926, **151**, 223. (*Signed by*) Henry J. S. Sand, E. de Barry Barnett, A. M. Ward.

ROBERTS, JOHN, Arley House, Bracondale, Norwich. British. "Almata" (Infant Food) Factory Manager, J. & J. Colman, Ltd., Norwich. Formerly Research Chemist. Received training in chemistry, etc., at Bradford Grammar School and Bradford Technical College. Six years' Chemist at Bradford Dyers Association. Studied colour chemistry at Leopold Cassella Co., Frankfurt-on-Main. Assistant Director (Technical) to Minister of Food. Ten years in the service of J. & J. Colman. (*Signed by*) L. J. Harris, R. A. Morton, F. C. Guthrie, T. P. Hilditch, V. J. Occleshaw, J. W. Corran.

ROBINSON, (Mrs.) ALICE MARY, 4, Arkleigh Mansions, Brent Street, Hendon, N.W. 4. British. Research Student. B.Sc., London. (*Signed by*) E. E. Turner, Florence R. Shaw, James F. Spencer, Mollie Barr.

RUSSELL, ARCHIBALD AFFLECK WEST, 3, Woburn Square, W.C. 1. British. Student (Research). B.A., B.Sc., Oxford. I am at present researching under Dr. Sugden at Birkbeck College and should like to keep myself abreast with current happenings in chemistry. (*Signed by*) Samuel Sugden, F. E. King, F. J. Thorneycroft.

RUSSELL-SMITH, WILLIAM (Heathfield, Little Heath, Potters Bar, Middlesex) (Private), 1, Aubert Park, Highbury, London, N. 5. British. Analytical Chemist. Engaged since 1907 as Analytical Chemist in Laboratory of Teschemacher & Smith, 1, Aubert Park, Highbury, N. 5. Partner since 1912. (*Signed by*) John Millar Thomson, Patrick H. Kirkaldy, H. Russell-Smith.

SETH, RALLA RAM, Sheo-Asharam, Delhi, India. Indian (British subject). Research Student for Ph.D. degree of Leeds University, Leeds. B.Sc. (Punjab, India). Studied up to M.Sc. (Chemistry) (Punjab). Demonstrated for five years in Hindu College, Delhi. Lecturer for a short period in the same College. Chemical Adviser and Director to Rallay Colour Works, Delhi.

Still on staff. Formerly Manufacturing Chemist to Imperial Disinfectant and Chem. Works, Delhi, and The Capital Oil and Soap Works, Delhi. (*Signed by*) F. M. Rowe, R. B. Forster, R. Whytlaw Gray.

SUGASAWA, SHIGEHIKO, Chemical Department, University College, Gower Street, W.C. 1. Japanese. Assistant of The Tokyo Imperial University. Doctor of Pharmacy (Tokyo Imperial University, Japan). Studies on the synthesis of some amino-acids. Studies on the synthesis of some indol derivatives, etc. Abstract of Chemical Papers, A., 1928, 874; 1929, 195–196; and others in *Journ. Pharm. Soc. Japan*, 1926–1928. (*Signed by*) Robert Robinson, William Bradley, Shinzo Murakami.

TAYLOR, HAROLD, 161, St. James's Road, Blackburn, Lancs. British. Chief Chemist, County Borough of Blackburn Gas Dept. Educated: Cockburn High School; Holborn Hall College; Leeds University. Experience: Messrs. Brotherton & Co., Ltd., Messrs Chance & Hunt, Ltd., Messrs. British Dyestuffs Corporation, Ltd., Messrs. City of Birmingham Gas Dept., and County Borough of Blackburn Gas Dept. (*Signed by*) J. B. Cohen, W. Lowson, Edward Halliwell.

THORNTON, WILLIAM, 11, John Street, Maidstone, Kent. British. School Teacher. M.Sc., 1927; B.Sc. (1st Class Honours in Chemistry), 1926 (Sheffield University). Chemistry Master at Asheton Schools, Tenterden, Kent. Anxious to keep in touch with modern developments in chemistry. (*Signed by*) W. P. Wynne, F. G. Tryhorn, G. M. Bennett, Thos. B. Smith, E. G. Turner, W. F. Wyatt.

TILLER, LESLIE WALTER, 39, Waimea Road, Nelson, New Zealand. British. Orchard Chemist to The Cawthron Institute, Nelson, N.Z. B.Sc., N.Z. (Victoria University College). Author of "Cold Storage Investigations, Season 1926" (Cawthron Institute Bull. No. 6, New Series). Co-author of following Cawthron Institute Bulletins: "Flesh Collapse in Apples, Season 1923," "Flesh Collapse in Apples, Season 1924," "Cold Storage Investigations, Season 1925" (Bull. No. 1, New Series), "A Report on Certain Diseases of the Apple in the Nelson District, Season 1925–26" (Bull. No. 4, New Series); also of "Soil Problems of the Montere Hills" (*Rep. Australas. Assoc. Advan. Sci.*, Vol. 16, 1923, p. 809). (*Signed by*) Thomas H. Easterfield, P. W. Robertson, H. O. Askew.

VAIDYA, JUGATRAM SHANKERPRASAD, Zandu Pharmaceutical Works, Ltd., Sayani Road, Dadar, Bombay, 14. Hindu (British subject). Manufacturing Chemist; Director, Zandu Pharmaceutical Works, Ltd., Bombay, 14. Diploma as Pharmaceutical Chemist from The Laxman Meram Chemical Laboratory, Rajkot (this institution is now abolished by the Government, but I possess the Diploma). I started the Zandu Pharmaceutical Works in 1910 and have worked as a manufacturing chemist ever since. I am conducting a Technical Research Laboratory connected with my works and have had practical experience in manufacturing chemistry for the last eighteen years. (*Signed by*) V. K. Bhagwat, K. M. Sheth, Kapilram H. Vakil.

WALMSLEY, HAROLD, 11, St. Stephen's Road, Lewisham, S.E. 13. English. Chemist-Optician. M.P.S. (Lond.); M.I.C.O. (Lond.). (*Signed by*) W. Chas. Sayers, John J. Laws, Percy Barrs.

WRIGHT, HERBERT LAWTON, 117, Queen's Road, Bury St. Edmund's, Suffolk. British. Works Chemist (Beet Sugar Factory). Diploma in Chemistry (Woolwich Polytechnic). Present position as above stated. Previous experience (chiefly analytical) in the following industries: (1) Oils and Lubricants, (2) Coal Tar distillation, (3) Dyestuffs, (4) Sugar refining. (*Signed by*) P. M. Mooney, H. E. C. Powers, L. J. de Whalley.

The following certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

KRISHNAMURTHY, PANCHAPAGESA, 210, Bowbazar Street, Calcutta, India. Hindu. Research Associate, Indian Association for the Cultivation of Science, Calcutta. M.A. (Madras). Previously worked as a Research Scholar of the University of Madras, and also as a Chemical Assistant in the Governmental Test House, Alipore. "The Union of Benzoylacetonitrile with Organic Bases in the Presence of Salicylaldehyde," Parts I and II. *J.C.S.*, 1927, 1349; 1928, 415. (*Signed by*) B. Sanjiva Rao, P. C. Guha.

MEYER, ANDRÉ, 3, Rue Docteur-Maret, Dijon (Côte d'Or), France. Française. Directeur, Laboratoire de Chimie Appliquée de la Faculté des Sciences, Université de Dijon. Docteur ès Sciences; Professeur à la faculté des Sciences, Dijon. Ancien Chef de Laboratoire aux Établissements Kuhlmann. (*Signed by*) Jocelyn Thorpe.

O'CALLAGHAN, MICHAEL ANGELO, Florida 734, Buenos Aires, Argentine Republic. Irish born. Resident in Sydney from 1897–1925 as Dairy Commissioner for the Government of New South Wales, and afterwards as Chief Dairy Commissioner for the Australian Commonwealth Government. (*Signed by*) Walter Thorp, Daniel J. O'Mahony.

PASCHALL, BENJAMIN STUART. Business address: 1015, American Bank Building, Seattle, Washington, U.S.A.; Residence: 1222, Summit Avenue, American, born Doylestown, Penna., U.S.A., 1879. Physician and Chemist. M.D., University of Pennsylvania, Philadelphia, Penna, 1903. Have done biochemical research since 1905 and run a commercial laboratory. Member of American Chemical Society, Society of Chemical Industry, Fellow of American Medical Association, etc. (*Signed by*) J. P. Longstaff.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

HOFMANN, KARL. Die radioaktiven Stoffe nach dem neuesten Stande der wissenschaftlichen Erkenntnis. Leipzig 1904. pp. 76. (*Recd.* 7/5/29.) From Mr. W. W. Starling.

INTERNATIONAL CONGRESS OF PHOTOGRAPHY, VII, London, July 9—14, 1928. Proceedings. London 1929. pp. xiv + 571. ill. (*Reference.*) 25*s.* net. From the Editors.

MITCHELL, H. H., and HAMILTON, T. S. The biochemistry of the amino acids. (American Chemical Society Monograph Series.) New York 1929. pp. 619. ill. $9·50 net. (*Recd.* 3/5/29.)

From the Publishers: The Chemical Catalog Company, Inc.

SCHUBERT, MAX. Die Cellulosefabrikation (Zellstoffabrikation). 4th edition. By ERNST ALTMANN. Berlin 1924. pp. xii + 279. ill. (*Recd.* 11/5/29.) From Dr. R. E. W. Maddison.

TEEPLE, JOHN E., and associates of the AMERICAN POTASH AND CHEMICAL CORPORATION. The industrial development of Searles Lake brines, with equilibrium data. (American Chemical Society

Monograph Series.) New York 1929. pp. 182. ill. $3 net. (*Recd.* 3/5/29.)

From the Publishers: The Chemical Catalog Company, Inc.

II. *By Purchase.*

DEUTSCHE CHEMISCHE GESELLSCHAFT. System der organischen Verbindungen. Ein Leitfaden für die Benutzung von Beilsteins Handbuch der organischen Chemie. By BERNHARD PRAGER, DORA STERN, and KONRAD ILBERG. Berlin 1929. pp. 246. (Two copies.) *M.* 24. (*Recd.* 19/4/29.)

FOWLER, R. H. Statistical mechanics: the theory of the properties of matter in equilibrium. Cambridge 1929. pp. viii + 570. ill. 35*s.* net. (*Recd.* 16/5/29.)

KENDALL, EDWARD C. Thyroxine. (American Chemical Society Monograph Series.) New York 1929. pp. 265. ill. 23*s.* net. (*Recd.* 16/5/29.)

RAWLINS, F. I. G., and TAYLOR, A. M. Infra-red analysis of molecular structure. Cambridge 1929. pp. xvi + 176. ill. 10*s.* 6*d.* net. (*Recd.* 16/5/29.)

SCHEIBER, JOHANNES, and SANDIG, KÜRT. Die künstlichen Harze. (Chemie in Einzeldarstellungen, Vol. XIV.) Stuttgart 1929. pp. xv + 376. ill. *M.* 28. (*Recd.* 7/5/29.)

SUTERMEISTER, EDWIN. Chemistry of pulp and paper-making. 2nd edition. New York 1929. pp. x + 565. ill. 32*s.* 6*d.* net. (*Recd.* 16/5/29.)

WALDSCHMIDT-LEITZ, ERNST. Enzyme actions and properties. Translated and extended by ROBERT P. WALTON. New York 1929. pp. xviii + 255. 20*s.* net. (*Recd.* 16/5/29.)

III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Bulletin No. 41. Studies concerning the so-called bitter pit of apples in Australia, with special reference to the variety "Cleopatra." By W. M. CARNE, H. A. PITTMAN, and H. G. ELLIOT. Melbourne 1929. pp. 101. ill.

BLOOMFIELD, J. J., and ISBELL, H. S. The problem of automobile exhaust gas in streets and repair shops of large cities. (From the *U.S. Public Health Reports*, 1928, **43**.)

GOLDBERGER, JOSEPH [and others]. A further study of experimental blacktongue with special reference to the blacktongue preventive in yeast. (From the *U.S. Public Health Reports*, 1928, **43**.)

KARAVAEV, N. L., and PALKIN, A. P. Das Trocknen der Zuckerrübe und Estrahieren des Zuckers aus derselben mittelst Diffusion. (From *Acta Univ. Asiæ Med.*, Ser. vi, No. 3.) [In Russian. German summary.]

ECHNOLOGY DEPT.

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DETROIT

PROCEEDINGS
OF THE
CHEMICAL SOCIETY.

Extra Meeting at the Institution of Mechanical Engineers, on Thursday, May 30th, 1929, at 5.30 p.m., the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

The PRESIDENT stated that the Council had been fortunate in securing Professor W. H. Perkin to deliver the first of the lectures founded in honour of the late Sir Alexander Pedler, C.I.E., F.R.S., a generous benefactor to the Society. He then called upon Professor Perkin to deliver his lecture entitled: "The Early History of the Synthesis of Closed Carbon Chains."

At the conclusion of the lecture a vote of thanks to Professor Perkin was moved from the Chair, seconded by Professor R. Robinson, and carried unanimously, Professor Perkin making acknowledgment.

Ordinary Scientific Meeting, Thursday, June 6th, 1929, at 8 p.m., the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:—

	Elected.	Died.
H. H. Maharaj Rana Sir Bhawani Singh Bahadur of Jhalawar	Feb. 15th, 1917.	April 13th.
Walter Leach	Dec. 16th, 1886.	April 12th.
Henry Harcourt Phillips	Feb. 16th, 1882.	May 19th.

It was announced that the following Committees for 1929—1930 had been appointed by the Council:—

Finance Committee: J. L. Baker, F. P. Dunn, C. A. Hill, E. S. Mond, J. C. Philip, R. H. Pickard, W. P. Wynne, and the Officers (Treasurer as Chairman), with the Assistant Secretary as Secretary.

House Committee: J. L. Baker, Sir Herbert Jackson, Sir William J. Pope, Sir Robert Robertson, Alexander Scott, J. M. Thomson, and the Officers, with the Assistant Secretary as Secretary.

Library Committee: J. J. Fox, T. A. Henry, J. R. Partington (Chairman), S. W. Smith, J. F. Spencer, S. Sugden, and the Officers, together with representatives of contributing Societies, with the Librarian as Secretary.

Publication Committee: M. P. Applebey, H. Bassett, G. M. Bennett, H. V. A. Briscoe, J. J. Fox, R. Whytlaw Gray, A. J. Greenaway, T. A. Henry, C. N. Hinshelwood, J. T. Hewitt, C. K. Ingold, J. Kenyon, H. King, K. J. P. Orton, J. C. Philip, F. L. Pyman, E. K. Rideal, R. Robinson, N. V. Sidgwick (Chairman), J. L. Simonsen, S. Smiles, S. Sugden, and the Officers, with the Editor as Secretary.

Research Fund Committee: A. J. Allmand, F. E. Francis, W. N. Haworth, G. G. Henderson, C. K. Ingold, A. Lapworth, W. H. Mills, K. J. P. Orton, Sir Robert Robertson, N. V. Sidgwick, and the Officers, with the Assistant Secretary as Secretary.

The following were formally admitted Fellows of the Chemical Society: Rupert Woolby Brooke, Tom Heap, and William Bradley.

Certificates were read for the first time in favour of:

Wilfrid Herbert Cliffe, 1, Main Avenue, Levenshulme, Manchester.
Oscar Vincent Hellestrand, 133, St. George's Road, Bexley, New South Wales.
Eric Frank Hersant, 1, Prince of Wales Crescent, Chalk Farm, N.W. 1.
Robert Ewen Jeffery, 9, Greycliffe Avenue, Vaucluse, New South Wales.
Ramanlal Chhaganlal Shah, B.A., M.Sc., 21, Cromwell Road, South Kensington, S.W. 7.
Alfred Pattinson Telford, 140, Harrowby Street, Liverpool.
Albert Reuben Tremain, B.Sc., c/o Australian Institute of Tropical Medicine, Townsville, North Queensland.
Frederick Thomas Trustrum, 36, Fordwych Road, N.W. 2.

The following papers were read:—

"The production of kojic acid from pentoses by *Aspergillus Oryzæ*." By F. Challenger, L. Klein, and T. K. Walker.

"The properties of the chlorides of sulphur. Part II. Molecular extinction-coefficients." By T. M. Lowry and G. Jessop.

"The isomerism of derivatives of 2-phenylnaphthylene-1 : 3-diamine." By M. S. Lesslie and E. E. Turner.

"Studies of valency. Part XIII. Further experiments on the molecular structure of the quadrivalent derivatives of tellurium." By T. M. Lowry and F. L. Gilbert.

"Synthetical experiments in the *iso*-flavone group. Part V. A new general method applicable to the synthesis of derivatives of 7-hydroxy*iso*flavone." By W. Baker, A. Pollard, and R. Robinson.

Ordinary Scientific Meeting, Thursday, June 20th, 1929, at 8 p.m., the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of Professor Charles Moureu, who was elected an Honorary Fellow on March 1st, 1923, and stated that the following resolution had been passed by the Council at its meeting held that afternoon :—

> The President, Officers, and Council of the Chemical Society learned with profound regret at their meeting on June 20th, 1929, of the death of their distinguished Honorary Fellow, Professor Charles Moureu, and desire to record their high appreciation of the eminent services rendered by Professor Moureu to the Science of Chemistry. They offer to Madame Moureu and to the Société Chimique de France their sincere sympathy in the irreparable loss they have sustained.

It was announced that

1. The following had been proposed by the Council as Honorary Fellows of the Society, and that a ballot for their election would be held at the first Ordinary Scientific Meeting next Session, October 17th :

> Professor M. Bodenstein, Professor N. Bohr, Sir William H. Bragg, Professor P. Debye, Professor A. Hantzsch, Doctor I. Langmuir, Professor W. Nernst, Professor W. Ostwald, Sir Ernest Rutherford, Professor O. Wallach, and Professor H. Wieland.

2. The following letter had been received from Professor Joji Sakurai, to whom the Council had conveyed its congratulations and its appreciative thanks.

> 3 *Akebono-cho, Hongo, Tokyo.*
> *May 1st*, 1929.
>
> THE SECRETARY,
> THE CHEMICAL SOCIETY,
> LONDON.
>
> DEAR SIR,
>
> In the course of the present year I shall complete my fifty years of Fellowship of the Chemical Society, and I desire to mark the occasion by contributing a small sum of ten guineas to the fund of the Society. The sum is shamefully small compared with the great benefit I have derived from being a Life Member for half a century, but it is what my means allow and not what my heart desires. If the Society will accept the enclosed cheque and use the money for any purpose it may consider appropriate I shall be happy.
>
> Yours faithfully,
> (*Signed*) JOJI SAKURAI.

3. The following Address of Congratulation had been sealed in Council that afternoon and would be presented on behalf of the Society by Principal H. R. Raikes to the University of Cape Town on the occasion of the centenary celebrations of the South African College to be held at Cape Town from October 1st to 5th, 1929.

The Chemical Society

to

The Chancellor, Vice-Chancellor, Council, and Senate of the University of Cape Town.

The President, Council, and Fellows of the Chemical Society send hearty greetings to the Chancellor, Vice-Chancellor, Council and Senate of the University of Cape Town on the occasion of its Celebration of the Centenary of the South African College.

Founded in 1829 as a private institution by a Committee which "was formed to frame a plan for providing better means of education than the Government Schools at that time afforded," the South African College was the first institution of its kind to be established in South Africa, and the pioneer work of the College during the first century of its existence will ever be regarded as having laid the sure foundation on which Higher Education in South Africa has been built. The task accomplished by the South African College was fittingly recognised by its incorporation in 1918 as the University of Cape Town.

The Chemical Society welcomes this opportunity of recording its appreciation of the great services rendered by the College to South Africa, and in conveying its congratulations expresses the hope that the University of Cape Town may contribute in ever-increasing measure to the progress of education.

Signed on behalf of the Chemical Society.

JOCELYN THORPE, *President.*
T. SLATER PRICE, *Treasurer.*
L.S. C. S. GIBSON, } *Secretaries.*
T. S. MOORE, }
F. G. DONNAN, *Foreign Secretary.*

Sealed this Twentieth Day of June, One Thousand Nine Hundred and Twenty-Nine.

4. A communication had been received from the Committee of the Van 't Hoff Fund for the endowment of research in pure and

applied chemistry. The amount from this fund available for distribution during 1930 is about 1200 Dutch guilders.

A Committee consisting of Professor A. F. Holleman (President), Professor F. M. Jaeger, Professor A. Smits, and Professor J. P. Wibaut (Secretary) has been appointed to award Grants. Applications should be sent before November 1st, 1929, by registered post to: "Het Bestuur der Koninklyke Akademie van Wetenschappen, bestemd voor de Commissie van het 'van 't Hoff-funds," Trippenhuis, Klovenierburgwal, Amsterdam." Every applicant is requested to submit a detailed account of the manner in which he proposes to expend the grant and to state the reasons for which he makes his application. Papers embodying the results of the research may be published in any journal, but acknowledgment must be made of the source of the grant. Copies of papers containing the results of the research must be forwarded to the Committee.

5. The attention of the Council had been directed by the Federal Council to the appointment of a Committee by the Board of Trade to consider

> "whether any, and if so what, amendments in the Patents and Designs Acts, or changes in the practice of the Patent Office are desirable,"

with the view to the preparation of a joint memorandum representing the considered views of chemists.

A Committee appointed by the Association of British Chemical Manufacturers some six months ago to consider this question would act on behalf of the Federal Council, and the Council of the Chemical Society had appointed Professor W. A. Bone as its representative on this Committee. On the completion of its work, this Committee would submit a memorandum to the Federal Council for its consideration and this memorandum, if approved, would then be forwarded as the considered opinion of chemists to the Board of Trade.

Fellows are invited to send to the Assistant Secretary of the Chemical Society expressions of opinion and suggestions which will be communicated by Professor Bone to this Committee.

The Association of British Chemical Manufacturers desires to be in a position to submit its memorandum to the Board of Trade before the holidays, and expressions of opinions and suggestions from Fellows should be submitted as soon as possible.

6. The Council had received from the Comité International de la Croix Rouge (1, Promenade du Pin, Geneva, Switzerland) the following particulars of an international competition for the discovery of a detective reagent of yperite (mustard gas):

1. Technical Conditions.

Detection of the yperite. The reagent must permit the detection of yperite in the air without the least ambiguity. The proposed reaction for the detection of the presence of yperite must be characteristic for that gas, and the author must specify whether the said reaction is influenced by another chemical substance mixed with yperite in war materials.

Characteristics of the reagent. The reagent and the proposed apparatus must be easy to construct and capable of being produced at a reasonable cost and in large quantities. Accurate indications should be given as to how and also as to how long they can be preserved.

Sensibility of the reagent. The sensibility of the reagent will be one of the essential points of the competition. The reagent must reveal a concentration-limit of 0·07 mgr. a litre of yperite in the air.

3. Regulations of the Competition.

A sum of 10,000 Swiss francs, granted by the International Committee of the Red Cross, shall be attributed by a jury to one or several of the competitors, according to the value of the works submitted.

The competition opens on July 1st, 1929, and closes on December 31st, 1930.

Chemists desirous of competing should, before December 31st, 1930, send their proposals to the Secretary of the International Committee of the Red Cross, in Geneva, in the following manner. The despatch should contain :

(*a*) Their names and addresses in a sealed envelope. On this envelope must be written a motto and a declaration, on their word of honour, that the reagent is the result of the author's own researches.

(*b*) A second envelope sealed, bearing the same motto and containing the detailed proposals. The official languages are French, English, German and Italian. On January 31st, 1931, the International Committee of the Red Cross will open the envelopes containing the proposals and have these proposals translated into French. The proposals will be known only by the motto, and not by the authors' names. When the jury meets, both the original texts and the translations are to be submitted to it for examination without its knowing the authors' names. At the end of the competition, after the proposals have been classed, the envelopes containing the authors' names will be opened and the result of the competition

proclaimed. The reagent or the dispositive adopted shall be called by its authors' name and become the property of the International Red Cross.

Certificates were read for the first time in favour of :—

Duncan Hunter, 110, Harlaxton Drive, Nottingham.
Frederick Charles Thompson, M.Sc., 16, Springfield Mount, Leeds.

The following certificate has been authorised by the Council for presentation to ballot under Bye-Law I (2) :

Thomas Alexander Grant, 63, East Street, Kingston, Jamaica.

Messrs. H. Paget and R. H. Purcell were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :

Charles Alfred Allgood.
Leslie Herbert Angus, M.Sc.
Albert Charles Chibnall, M.A., Ph.D.
David Andrew Crighton, B.Sc.
James Gerald Crowther.
Herbert Tasman Davies.
Knowles Edge, B.A.
David Lloyd Emrys Evans.
Howard Ernest Goodson, A.R.C.S., A.I.C.
Gwilym Owen Griffiths, B.Sc.
Kin Kin Gyi, B.A.
George Monty Hamilton, M.Sc.
John Stephen Henthwaite.
John Arthur Hetherington, B.Sc.
Henry Rowland Hill, B.A.
Walter Reginald Hunt.
Panchapagesa Krishnamurthy, M.A.
George Berthold Loeffler.
Alexander Leicester McAulay, M.A., B.Sc., Ph.D.
André Meyer, D.-ès.-Sc.
Michael Angelo O'Callaghan.
Benjamin Stuart Paschall, M.D.
Harry Gordon Poole, M.Sc.
Alan Richard Powell.
John Roberts.
Alice Mary Robinson, B.Sc.
Archibald Affleck West Russell, B.A., B.Sc.
William Russell-Smith.
Ralla Ram Seth, B.Sc.
Shigehiko Sugasawa.
Harold Taylor.
William Thornton, M.Sc.
Leslie Walter Tiller, B.Sc.
Jugatram Shankerprasad Vaidya.
Harold Walmsley.
Herbert Lawton Wright.

The following papers were read :

"Manipulation in intensive drying." By H. B. Baker.

"Notes on intensive drying of gaseous media." By W. A. Bone.

"The light emission from the phosphorescent flames of ether, acetaldehyde, propaldehyde, and *n*-hexane." By H. J. Emeléus.

"The relative configurations of *d*-β-octanol and its dextrorotatory halides. The interconversion of the optically active β-octanols by a new method." By A. J. H. Houssa, J. Kenyon, and H. Phillips.

"Amylases of the cereal grains. Oats." By J. L. Baker and H. F. E. Hulton.

The Council has made the following Grants from the Research Fund :

	£	s.	d.
Optically active hydrocarbons. C. Buchanan. (Glasgow Univ.)	10	0	0
The reduction of nitric oxide gas. A. J. Butterworth. (E. Lond. Coll.)	10	0	0
The constitution of the molybdic acids and their molybdates. D. A. Campbell. (Nottingham Univ. Coll.)	10	0	0
The behaviour of boron in union with organic radicals. F. Challenger. (Manchester Univ.)	6	0	0
Organic acids by fermentation processes. F. Challenger. (Manchester Univ.)	10	0	0
Isomeric change of aromatic compounds (*contd.*). A. W. Chapman. (Sheffield Univ.)	10	0	0
Determination of the structure of certain sesquiterpene derivatives by synthesis. G. R. Clemo. (Armstrong Coll.) ...	10	0	0
The chemistry of aconitic acid. R. D. Desai. (Imperial Coll.)	12	0	0
The studies on colour and fluorescence of the pyronine dyestuffs. A. N. Dey. (Imperial Coll.)	12	0	0
The formation and stability of β-lactones. A. Kandiah. (Imperial Coll.)	12	0	0
The constitution of the glucoside hesperidin. F. E. King. (E. Lond. Coll.)	12	0	0
Tautomerism of diamines. M. S. Lesslie (Miss). (Bedford Coll.)	10	0	0
Three-carbon tautomerism. E. Leton. (Imperial Coll.) ...	10	0	0
The investigation of centro-asymmetric systems. P. Maitland. (Cambridge Univ.)	12	0	0
The constitution of sparteine. R. Raper. (Armstrong Coll.) ...	10	0	0
The electrical conductivities of the copper salts of a series of substituted malonic acids. H. L. Riley. (Imperial Coll.)	10	0	0
Additive properties of certain conjugated hydrocarbons. W. D. Scott. (Imperial Coll.)	10	0	0
Isomerism of diphenyl compounds. F. R. Shaw (Miss). Bedford Coll.)	6	0	0
Configuration of the hexahydroterephthalic acids. R. V. Thomas (Cambridge Univ.)	10	0	0
Syntheses of cyclic compounds (*contd.*). A. I. Vogel. (Imperial Coll.)	12	0	0
The relation between chemical constitution and antiseptic action in derivatives of 1 : 3-diketohydrindene. T. K. Walker. (Manchester Tech. Coll.)	10	0	0
Studies of acids and bases in non-aqueous solvents. W. F. K. Wynne-Jones. (Reading Univ.)	10	0	0
	£224	0	0

THE LIBRARY.

The Library will be closed for Stocktaking from Monday, August 5th, until Saturday, August 17th (inclusive). During the following four weeks (August 19th to September 14th), the Library will close daily at 5 p.m.

LIST OF FELLOWS FOR 1929.

It has been decided to publish the List of Fellows for 1929, and to supply it to those Fellows who make application before August 31st, 1929. In order that the new List may be as complete as possible, Fellows are asked to notify the Assistant Secretary of any change of address or other alteration before the end of July.

HARRISON MEMORIAL PRIZE.

The Prize, of the value of about £150, is to be awarded to the chemist of either sex, being a natural born British subject and not at the time over thirty years of age, who, in the opinion of the Selection Committee, during the previous five years has conducted the most meritorious and promising original investigations in any branch of pure or applied chemistry and published the results of those investigations in a scientific periodical or periodicals.

Provided that, in the opinion of the Selection Committee, there is a candidate of sufficient distinction to warrant an award of the Prize, the next award is to be made in December, 1929.

Applications, five copies of which must be submitted, should contain the following information :

(*a*) Name (in full).
(*b*) Age (birth certificate to accompany application).
(*c*) Degrees (name of University where obtained).
(*d*) Other qualifications.
(*e*) Experience.
(*f*) Titles of published papers, with authors' names, including full references to publication.
(*g*) Where research was carried out.
(*h*) Testimonials or references.
(*i*) Any other information bearing on the application.

The Selection Committee is prepared to receive applications, nominations, or information as to candidates eligible for the Prize. Any such communication must be received by the President, The Chemical Society, Burlington House, Piccadilly, London, W. 1, not later than Monday, December 2nd, 1929.

List of Papers, or Abstracts thereof, received between May 16th and June 20th, 1929. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"The Reimer–Tiemann reaction with *m*-fluorophenol and the nitration of 4-fluoro-2-hydroxy- and 2-fluoro-4-hydroxy-benzaldehydes." By H. H. HODGSON and J. NIXON.

"On the connexion between absorbed energy and velocity in photochemical reactions of the $I^{0.5}$ type." By A. J. ALLMAND.

"The interaction of sodamide and alkyl iodides with acetophenone and its homologues." By A. RUSSELL.

"The effect of the cohesion of the medium on reaction velocity. The velocity of interaction of *N*-chloroacetanilide and hydrobromic acid in aqueous media." By M. RICHARDSON and F. G. SOPER.

"The reactions taking place in a mixture of ether, acetyl bromide, and naphthol." By H. L. BASSETT and K. F. TAYLOR.

"The interaction of carbon tetrabromide with sulphur and selenium." By H. V. A. BRISCOE, J. B. PEEL, and J. R. ROWLANDS.

"The heat of formation of sodium sesquicarbonate in solution at 30° C." By J. C. SWALLOW.

"Equilibrium between alcohols and salts. Part III." By G. C. GIBSON, J. O. DRISCOLL, and W. J. JONES.

"Substitution in resorcinol derivatives. Part II. Bromo-derivatives of β-resorcylaldehyde and their orientation." By (the late) M. G. S. RAO, C. SRIKANTIA, and M. S. IYENGAR.

"Synthetical experiments on the aporphine alkaloids. Part VI. *iso*Thebaine. Attempted syntheses of 3 : 4 : 5-trimethoxyaporphine." By R. K. CALLOW, J. M. GULLAND, and R. D. HAWORTH.

"Germanium. Part IV. The solubility of germanium dioxide in acids and alkalis." By W. PUGH.

"Germanium. Part V. The hydrolysis of sodium germanate and the dissociation constants of germanic acid." By W. PUGH.

"The isomeric trithioacetaldehydes." By E. V. BELL, G. M. BENNETT, and F. G. MANN.

"Studies in keto-lactol tautomerism. Part III. Influence of bulky substituents on the tautomerism of α-carboxy-γ-acetyl-ββ-methylethylbutyric acid and α-carboxy-γ-acetyl-ββ-diethylbutyric acid." By M. QUDRAT-I-KHUDA.

"Studies in keto-lactol tautomerism. Part IV. Chemistry of 1 : 1 : 2-trimethyl-5-acetyl*cyclo*pentane-2-carboxylic acid.

Some observations on the constitution of the acid esters of camphoric acid and a synthesis of homo*epi*camphor." By M. QUDRAT-I-KHUDA.

"The rotatory dispersion of organic compounds. Part XVIII. Potassium borotartrate." By T. M. LOWRY.

"The formation of thionaphthindole." By E. W. MCCLELLAND.

"The reaction between magnesium phenyl bromide and phenyl glycide ether." By D. R. BOYD and G. J. C. VINEALL.

"Dyes derived from cinchomeronic acid." By J. D. TEWARI.

"Viscosity and constitution." By J. D. A. JOHNSON.

"The electrokinetic potential and its relation to the rate of coagulation of colloids. Part I." By B. N. GHOSH.

"Action of alkali on stannic oxide sol. Part I." By B. N. GHOSH.

"Action of alkali on stannic oxide sol. Part II." By B. N. GHOSH.

"The constitution of linolic acid." By R. D. HAWORTH.

"Electrometric titration curves of dibasic acids. Part III. Substituted malonic acids." By R. GANE and C. K. INGOLD.

"2 : 4-Dinitrobenzaldehyde as a reagent." By G. M. BENNETT and W. L. C. PRATT.

"10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part X. The 1- and/or 3-methyl derivatives. The condensation of arsenious chloride and phenyl-*m*-tolylamine." By C. S. GIBSON and J. D. A. JOHNSON.

"The slow oxidation of phosphorus. Part I. The inhibition of the glow of phosphorus by phosphorus trioxide." By C. C. MILLER.

"The slow oxidation of phosphorus. Part II. The oxidation products of phosphorus and phosphorus trioxide." By C. C. MILLER.

"The rates of saponification of various commercial oils, fats and waxes and pure triglycerides by aqueous alkali." By J. W. MCBAIN, C. W. HUMPHREYS, and Y. KAWAKAMI.

"The equilibrium $CO_2+C \rightleftharpoons 2CO$, and the structure of carbon." By F. J. DENT and J. W. COBB.

"Substances of the phenarsazine type containing the acenaphthene nucleus." By C. S. GIBSON and J. D. A. JOHNSON.

"Hydrolysis and decomposition of menthyl methyl xanthogenate and of boronyl methyl xanthogenate." By I. M. MCALPINE.

"The action of phosphoric oxide on β-anilidobutyracetal." By F. A. MASON.

"The action of phosphorus pentachloride on ethyl tartrate." By T. S. PATTERSON and A. R. TODD.

"Some substances derived from the anhydrocatechin tetramethyl ethers." By W. BAKER.

"The constitution of carthamin. Part I." By C. KURODA.
"The lupin alkaloids. Part II." By G. R. CLEMO and R. RAPER.
"Glucosides. Part II. The preparation of α-glucosides from β-glucosyl chlorides." By W. J. HICKINBOTTOM.
"Note on the phosphorescent flame of arsenic." By H. J. EMELÉUS.
"Comparison of directive powers of elements having consecutive atomic numbers in aromatic substitutions. Part I. Orienting influence of oxonium oxygen." By R. J. W. LE FÈVRE.
"The synthesis of *meso*-alkyl and *meso*-aryl derivatives of anthracene. Part VI." By E. DE B. BARNETT and N. F. GOODWAY.

ADDITIONS TO THE LIBRARY

I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. I, Chemische Methoden, Teil 2, II Hälfte, Heft iv. Berlin 1929. pp. 2149 to 2307.
From the Publishers: Herren Urban & Schwarzenberg.

INSTITUT INTERNATIONAL DE CHIMIE SOLVAY. Troisième Conseil de Chimie tenu a Bruxelles du 12 au 18 Avril 1928. Rapports et discussions sur des questions d'actualité. Paris 1928. pp. xvi + 562. (*Reference.*) 70 *fr.* From Sir William Pope.

INSTITUT INTERNATIONAL DE PHYSIQUE SOLVAY. Cinquième Conseil de Physique tenu a Bruxelles du 24 au 29 Octobre 1927. Électrons et photons. Paris 1928. pp. viii + 291. ill. (*Reference.*) 60 *fr.* From Sir William Pope.

NATIONAL BENZOLE ASSOCIATION and UNIVERSITY OF LEEDS. *Joint Benzole Research Committee.* Sixth report. London 1929. pp. iv + 212. ill. (*Reference.*) From the Association.

PARIJS, ALBERT HENDRIK. Verdringing van de aldehyd-groep in piperonal en derivaten. Leiden [1929]. pp. xii + 200. (*Recd.* 23/5/29.) From the Author.

STIEGLITZ, JULIUS. [Editor.] Chemistry in medicine: a co-operative treatise intended to give examples of progress made in medicine with the aid of chemistry. New York 1928. pp. xxii + 757. ill. $2 net. (*Recd.* 6/6/29.) From Dr. T. A. Henry.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. V. Part iv. Berlin 1929. pp. 753 to 980. ill. *M.* 10.
From the Publishers: Herren Urban & Schwarzenberg.

TINKLER, CHARLES KENNETH, and MASTERS, HELEN. Applied chemistry: a practical handbook for students of household science

and public health. 2nd edition. Vol. I. London 1929. pp. xii + 296. ill. 15*s.* net. (*Recd.* 11/6/29.)

From the Publishers: Messrs. Crosby Lockwood & Son.

II. *By Purchase.*

ALEMBIC CLUB REPRINTS, No. 19. The foundations of the theory of dilute solutions. Papers on Osmotic pressure by J. H. VAN 'T HOFF, and on Electrolytic dissociation by SVANTE ARRHENIUS, 1887. Edinburgh 1929. pp. 67. ill. 2*s.* 6*d.* net. (*Recd.* 10/6/29.)

BAUER, K. HUGO. Die trockenden Öle. (Monographien aus dem Gebiete der Fett-Chemie, Vol. XI.) Stuttgart 1928. pp. vii + 354. ill. *M.* 27. (*Recd.* 12/6/29.)

CORDIER, VICTOR. Die chemische Zeichensprache einst und jetzt. Graz 1928. pp. xii + 220. ill. *M.* 15. (*Recd.* 28/5/29.)

ENGLER, CARL, and HÖFER, HANS VON. Das Erdöl, seine Physik, Chemie, Geologie, Technologie und sein Wirtschaftsbetrieb. 2nd edition. Edited by JENÖ TAUSZ. Vol. III. Teil 2. Lagerung und Transport des Erdöls und seiner Produkte zu Lande. By JULIUS SWOBODA. Leipzig 1929. pp. viii + 256. ill. *M.* 28. (*Recd.* 4/6/29.)

FLINT, H. T. Wave mechanics, being one aspect of the new quantum theory. London 1929. pp. x + 117. ill. 3*s.* 6*d.* net. (*Recd.* 18/5/29.)

HALL, SIR ALFRED DANIEL. Fertilisers and manures. 3rd edition. London 1929. pp. xxiv + 414. ill. 8*s.* net. (*Recd.* 18/5/29.)

HURD, CHARLES DEWITT. The pyrolysis of carbon compounds. (American Chemical Society Monograph Series.) New York 1929. pp. 807. 52*s.* net. (*Recd.* 20/6/29.)

IRON AND STEEL INSTITUTE, with the co-operation of the NATIONAL FEDERATION OF IRON AND STEEL MANUFACTURERS. Iron, Steel, and Industrial Fuel: survey of current literature. Vol. I, etc. London 1929 +. (*Reference.*)

LANGE, OTTO. Technik der Emulsionen. Berlin 1929. pp. viii + 391. ill. *M.* 29.50. (*Recd.* 12/6/29.)

LATIMER, WENDELL MITCHELL, and HILDEBRAND, JOEL HENRY. Reference book of inorganic chemistry. New York 1929. pp. x + 442. ill. 16*s.* net. (*Recd.* 20/6/29.)

LAWRENCE, A. S. C. Soap films: a study of molecular individuality. London 1929. pp. xii + 141. ill. 12*s.* 6*d.* net. (*Recd.* 20/6/29.)

LUNDEGÅRDH, HENRIK. Die quantitative Spektralanalyse der Elemente und ihre Anwendung auf biologische, agrikulturchemische

und mineralogische Aufgaben. Jena 1929. pp. vi + 155 + 13 plates. ill. *M.* 20. (*Recd.* 12/6/29.)

LUSK, GRAHAM. The elements of the science of nutrition. 4th edition. Philadelphia 1928. pp. 844. ill. 32*s.* 6*d.* net. (*Recd.* 18/5/29.)

MAYER, A. W. Chemisches Fachwörterbuch, Deutsch-Englisch-Französisch. Für Wissenschaft, Technik, Industrie und Handel. Vol. I. Leipzig 1929. pp. xiv + 826. (*Reference.*) *M.* 75.

MICHAELIS, LEONOR. Oxydations-Reductions-Potentiale, mit besonderer Berücksichtigung ihrer physiologischen Bedeutung. Teil II of "Wasserstoffionenkonzentration." Berlin 1929. pp. x + 171. ill. *M.* 14.50. (*Recd.* 12/6/29.)

ORR, JOHN BOYD, with the assistance of HELEN SCHERBATOFF. Minerals in pastures and their relation to animal nutrition. London 1929. pp. xvi + 150. 10*s.* 6*d.* net. (*Recd.* 18/5/29.)

POUCHER, WILLIAM ARTHUR. Perfumes, cosmetics and soaps, with especial reference to synthetics. 3rd edition. Vol. II. London 1929. pp. xiv + 521. ill. 25*s.* net. (*Recd.* 18/5/29.)

PROCHAZKA, GEORGE A. Accounting and cost finding for the chemical industries. (Chemical Engineering Series.) New York 1928. pp. x + 242. ill. 15*s.* net. (*Recd.* 18/5/29.)

SCHNEIDEWIND, RICHARD. A study of chromium plating. (Univ. Michigan, Engineering Research Bulletin No. 10.) Ann Arbor 1928. pp. 141. ill. 5*s.* net. (*Recd.* 14/6/29.)

UBBELOHDE, LEO. Handbuch der Chemie und Technologie der Öle und Fette. Chemie, Vorkommen, Gewinnung und Verarbeitung der Öle, Fette, Wachse und Harze. 2nd edition. Edited by HANS HELLER. Vols. I and III, part i. Leipzig 1929. pp. xvi + 791, xx + 392. ill. *M.* 75, *M.* 42. (*Recd.* 4/6/29.)

VOGEL, HERMANN WILHELM. Handbuch der Photographie. New edition. Edited by ERICH LEHMANN. Vol. I, part i. Photochemie und photographische Chemie. By WALTER NODDACK and ERICH LEHMANN. Berlin 1928. pp. x + 314. ill. *M.* 15. (*Recd.* 12/6/29.)

—— —— Vol. I, part ii. Fabrikation und Prüfung der photographischen Materialien. By WILLY NAUCK and ERICH LEHMANN. Berlin 1928. pp. viii + 282. ill. *M.* 12. (*Recd.* 12/6/29.)

—— —— Vol. II, part i. Photographische Optik. By HANS HARTING. Berlin 1925. pp. vi + 187. ill. *M.* 7. (*Recd.* 12/6/29.)

—— —— Vol. II, part ii. Das Negativverfahren. By OTTO MENTE, ERICH LEHMANN and WILLY NAUCK. Berlin 1926. pp. 192. ill. *M.* 9. (*Recd.* 12/6/29.)

—— —— Vol. II, part iii. Die Kopierverfahren. By ERICH STENGER. Berlin 1926. pp. 286. ill. *M.* 10. (*Recd.* 12/6/29.)

WALDEN, PAUL. Salts, acids, and bases: electrolytes: stereochemistry. New York 1929. pp. xii + 397. ill. 20*s.* net. (*Recd.* 18/5/29.)

III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Pamphlet No. 11. The Tasmanian grass grub (*Oncopera intricata* Walker). A preliminary report on its life history, and methods of control. By GERALD F. HILL. Melbourne 1929. pp. 43. ill.

GHOSH, JNANENDRA CHANDRA. Kinetik der Photosynthese bei Pflanzen. Eine theoretische Deutung der experimentellen Ergebnisse Harders über die Kohlensäureassimilation bei *Fontinalis.* (From the *Jahrb. wiss. Botanik*, 1928, **69**.)

HOME OFFICE. *Factory Department.* Memorandum on the manufacture, use and storage of cellulose solutions. London 1929. pp. 12. ill.

IMPERIAL INSTITUTE. The Mineral Industry of the British Empire and Foreign Countries. Cadmium. London 1929. pp. 23.

KONDAKOV, J. L. Les sylvestrènes et les carènes. (From *Parfumerie Mod.*, 1927, **20**.)

MEDICAL RESEARCH COUNCIL. Special Report Series, No. 123. Iodine in nutrition: a review of existing information. By JAMES BOYD ORR and ISABELLA LEITCH. London 1929. pp. 108.

—— Special Report Series, No. 128. Reports on biological standards. II. Toxicity tests for novarsenobenzene (neosalvarsan). By FLORENCE M. DURHAM, J. H. GADDUM, and J. E. MARCHAL. London 1929. pp. 40. ill.

MINISTRY OF HEALTH. Report of an investigation regarding the emission of fumes from artificial silk works. By the Chief Inspector of Alkali, etc., Works. London 1929. pp. 7.

OKUDA, YUZURU. A method of estimating cysteine, cystine, and their derivatives in tissues and biological fluids, and the application of the method. (From the *J. Dept. Agric., Kyushu Imp. Univ.*, 1929, **2**.)

PERLITZ, HARALD. On the domain of the atom of bismuth in its crystal. (From the *Sitzungsber. Naturforscher-Ges. Univ. Tartu*, 1929, **35**.)

—— Some remarks on the change of volumes and electric resistances of antimony and arsenic at fusion. (From the *Sitzungsber. Naturforscher-Ges. Univ. Tartu*, 1929, **35**.)

SCIENTIFIC AND INDUSTRIAL RESEARCH. Department of. Report of test by the Director of Fuel Research on the Maclaurin plant installed at Dalmarnock Gas Works, Glasgow. London 1929. pp. vi + 26. ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH. Department of. *Building Research.* Special Report No. 12. Investigations into the durability of architectural terracotta and faience. By W. A. MCINTYRE. London 1929. pp. viii + 73. ill.

—— —— Special Report No. 13. Effect of temperature on the setting times of cements, and on the strength of cements, mortars and concretes. By W. N. THOMAS and N. DAVEY. London 1929. pp. iv + 38.

—— *Engineering Research.* Special Report No. 14. Properties of materials at high temperatures. 4. The strength at elevated temperatures of low carbon steels for boiler construction. By REGINALD GEORGE BATSON and H. J. TAPSELL. London 1929. pp. vi + 41. ill.

—— *Food Investigation.* Special Report No. 34. The leakage of heat into ships' insulated holds. London 1929. pp. vi + 34. ill.

—— *Forest Products Research.* Bulletin No. 2. *Lyctus* powder-post beetles. By RONALD C. FISHER. London 1928. pp. vi + 46. ill.

SOUTH AFRICA, UNION OF. *Department of Agriculture.* (Division of Chemistry, Series No. 90.) The determination and application of the electrical resistance and p_H value in irrigation soil surveys. By ARTHUR STEAD. (From the *S. African J. Sci.*, 1928, 25.)

—— —— (Division of Chemistry, Series No. 91.) The sphere of the chemist in agriculture. Solving problems for the farmer. (From *Farming in S. Africa*, 1928.)

—— —— (Division of Chemistry, Series No. 92.) Manuring of wattles. By C. O. WILLIAMS. Fertilizer trials with wattles. By J. B. OSBORN. (From *Farming in S. Africa*, 1928 and 1929.) ill.

STEECE, HENRY M. Recent fertilizer experiments with cotton. (From *Rep. Agric. Exper. Stations*, 1927.)

UNION OF SOCIALIST SOVIET REPUBLICS. *Scientific Technical Department of the Supreme Council of National Economy.* Central Institute for Tobacco Investigations. Bulletin No. 34. Zur Kenntnis der Tabakfermentation. By A. I. SMIRNOV. Krasnodar 1927. pp. 115. [In Russian. German summary.]

—— —— —— Bulletin No. 36. Fertilizer experiments with tobacco in Veseloye (near Adler) in 1925. By A. V. OTRYGANIEV. Krasnodar 1927. pp. 20. [In Russian. English summary.]

—— —— —— Bulletin No. 37. Soil investigations of the chemical section. By A. SCHMUCK, S. NEGOVELOV, and V. ZAPOLSKI. Krasnodar 1927. pp. 47. [In Russian.]

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, October 17th, 1929, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

Among the visitors welcomed by the President were Professor Dr. K. Fajans of Munich and Sir Venkata Raman of Calcutta.

The PRESIDENT reported the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
John Bairstow	Dec. 3rd, 1891.	June 19th, 1929.
Arthur C. Cockburn	Dec. 2nd, 1880.	July 25th, 1929.
Ernest Hartshorne	June 18th, 1925.	Sept. 16th, 1929.
Ernest E. Mabbott	May 7th, 1925.	June 6th, 1929.
Gerald W. Martin	Nov. 19th, 1885.	Oct. 14th, 1929.
Thomas H. Moore	June 18th, 1902.	July 20th, 1928.
William W. J. Nicol	Feb. 1st, 1883.	March 18th, 1929.
William H. Perkin	April 17th, 1884.	Sept. 17th, 1929.
Percy B. Phipson	Dec. 7th, 1905.	March 8th, 1929.
Sudhindranarayan Ray	Dec. 6th, 1923.	July 6th, 1929.
William Regester	April 15th, 1880.	July 4th, 1929.
Samuel B. Schryver	May 4th, 1899.	Aug. 21st, 1929.
Rustomji N. Unwalla	March 4th, 1896.	May 25th, 1929.
Robert L. M. Wallis	Dec. 1st, 1910.	April 1st, 1929.
Paul T. White	May 6th, 1897.	June 29th, 1929.

In referring to the death of Professor W. H. Perkin, the PRESIDENT said:

"Fellows will have felt the deepest regret on hearing of the death of Professor William Henry Perkin, which occurred at Oxford on September 17th last, and will wish to join with the Council in sending the following expression of sympathy to Mrs. Perkin:

> The Council and Fellows of the Chemical Society desire to express to you their deepest sympathy on the death of your husband, Professor William Henry Perkin. They recall with gratitude his long and signal services to the Society as Councillor, Vice-President, and President and the influence he always

exerted among them by his inspiring personality and his desire to further the objects for which the Society was founded.

In common with the whole Scientific world they mourn the loss of one who added lustre to a name already renowned in Chemical Science, and whose contributions to our knowledge of Organic Chemistry will be remembered as long as the science endures.

"William Henry Perkin was born at Sudbury on June 17th, 1860, and was the eldest son of the late Sir William Perkin. After studying at the Universities of Würzburg and Münich, at the latter of which he was Privat-docent, he became successively Professor of Chemistry in the Heriot-Watt College, Professor of Organic Chemistry in the University of Manchester and Waynflete Professor of Chemistry in the University of Oxford. His great contributions to Organic Chemistry fall into three classes :

(1) The chemistry of carbon rings, an account of which he gave us as recently as May last when he delivered the first Pedler Lecture,
(2) The chemistry of camphor and the terpenes,
(3) The chemistry of the alkaloids.

In all these sections he published papers of the highest fundamental importance, and the chemistry of these groups, as it stands to-day, is mainly due to him.

"Perkin was essentially an experimenter, probably as great an experimenter and manipulator as organic chemical science has as yet produced. To this great gift he was able to apply a mind teeming with original ideas and a brain full of detailed knowledge and experience such as is rarely possessed by any one man. An indefatigable worker, he was able to contribute, both by himself and with the aid of his many co-workers, an unusually large number of papers which were published in our Journal and elsewhere. These will always stand as a monument to his fame."

It was also announced that :

1. Mr. Basil Holmes had presented to the Society a framed picture of a group of Fellows of the Royal Society, published July 1st, 1878, which was formerly in the possession of the late Dr. J. Hall Gladstone.

2. The following Address of Congratulation had been sealed in Council that afternoon, and would be presented by the President to the Comité d'Organisation du Centenaire Paul Schutzenberger at the Celebrations to be held in Paris on November 7th, 1929 :

The President, Council, and Fellows of the Chemical Society send greetings to the Comité d'Organisation du Centenaire Paul

Schutzenberger and welcome the opportunity of participating in the Celebrations in honour of the Centenary of the birth of this great French Chemist.

The work of Paul Schutzenberger embraced a wide section of Chemical Science and formed a basis on which much of our modern knowledge is built. His work on the derivatives of Phosphorus, Arsenic, and Silicon, as well as his notable contributions to Organic Chemistry, especially in connection with the natural colouring matters, provide examples which have served as a source of inspiration to many who have followed after him.

The Chemical Society joins with its French colleagues in offering homage to the memory of a great Frenchman and a great Chemist.

Signed on behalf of the Chemical Society,

JOCELYN THORPE, *President.*
T. SLATER PRICE, *Treasurer.*
C. S. GIBSON, T. S. MOORE, } *Secretaries.*
F. G. DONNAN, *Foreign Secretary.*

Sealed in Council this Seventeenth Day of October, One Thousand Nine Hundred and Twenty-Nine.

3. The second Liversidge Lecture, entitled "Surface Forces and Chemical Equilibria," would be delivered by Professor Dr. H. Freundlich on Thursday, December 12th, 1929, in the Meeting Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1 (by kind permission of the Council of that Institution). Tickets of admission will not be required.

4. The Annual Chemical Dinner, at which Lord Dewar would preside, would be held in the Connaught Rooms, Great Queen Street, W.C. 2, on Friday, November 8th, 1929, at 7.30 p.m. Tickets, price 12*s.* 6*d.* each, for lady or gentleman, including gratuities, but not wines, can be obtained from Mr. F. A. Greene, Chemical Industry Club, 2, Whitehall Court, S.W. 1.

The following were formally admitted Fellows of the Chemical Society: B. H. Ingham, H. G. Smith, S. Sugasawa, W. R. Littlejohn, J. A. B. Smith, R. K. Callow, and D. A. Crighton.

Certificates were read for the first time in favour of:

Mark Barent, B.Sc., 29, Victoria Park Square, E. 2.

Lindsay Heathcote Briggs, M.Sc., Massey Agricultural College, Palmerston North, New Zealand.

John Henry Brightman, B.Sc., 102, Hodford Road, Golders Green, N.W. 11.

William Chalmers, M.A., Department of Chemistry, McGill University, Montreal, Canada.

Walter Cule Davies, B.Sc., Ph.D., 9, Grove Place, Penarth, Glam.
Charles Edward Duce, Elsonia, Eling Lane, Totton, Southampton.
Henry Alexander Sherwin Gothard, Verbena, Southlands Road, Bickley, Kent.
John Graymore, M.Sc., A.I.C., Sunrising, Lincoln Road, Newark.
Frank Arnold Greene, M.I.Mech.E., M.I.E.E., M.I.Chem.E., 50, Clifton Hill, St. John's Wood, N.W. 8.
Chika Kuroda, D.Sc., 970, Minami-Somei, Sugamo, Tokyo.
Leopold Ferdinard Levy, M.Sc., 27, Wilmot Road, Downhills Park, N. 17.
Albert Reginald McLeod, M.D., C.M., T. & G. Building, Elizabeth Street, Sydney, N.S.W.
John Gordon Malloch, M.Sc., Ph.D., University of Alberta, Edmonton, Alberta, Canada.
Frederick Cecil Barron Marshall, B.Sc., 91, Calabria Road, N. 5.
Owen Mathias, M.Sc.Tech., A.I.C., 28, Stanley Road, Whalley Range, Manchester.
Ernest John Miller, B.Sc., 128, Lozells Road, Handsworth, Birmingham.
Arthur Williams Morgan, 21, Conduit Road, Bedford.
Basanta Kumar Pal, M.Sc., Chemistry Department, Intermediate College, Mandalay, Burma.
Basrur Sanjiva Rao, Prof., M.A., Ph.D., Central College, Bangalore, India.
Eric Samuel Richards, 33, Price Street, Smethwick, Staffs.
Frank Sharples, Assoc.M.C.T., 985, Middleton Road, Chadderton, Oldham.
Roger Stansfield, 48, Virginia Avenue, Eden Terrace, Auckland, New Zealand.
Katherine Frieda Taylor, B.Sc., Ph.D., 3, Woodland Place, Penarth, Glam.
Sidney Charles Gunther Tweedy, 77, The Grove, Palmers Green, N. 13.
Bishambhar Dayal Varma, 68, Ganeshganj, Lucknow, India.

The following certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

Atulpati Banerji, D.Sc., Medical Officer, Reformatory & Industrial School, Alipore, Calcutta.
Henri Gault, Prof., Société des Usines Chimiques Rhône-Poulenc, St. Fons (Rhône), France.

Mr. H. L. Riley and Dr. I. Vogel were elected Scrutators and a ballot for the election of Honorary Fellows was held. The following were subsequently declared elected as Fellows:

Professor Dr. Max Bodenstein (Berlin).
Professor Dr. Niels Bohr, For.Mem.R.S. (Copenhagen).
Sir William H. Bragg, K.B.E., F.R.S.
Professor Dr. Peter Debye (Leipzig).
Professor Dr. Arthur Hantzsch (Dresden).
Professor Irving Langmuir (Washington).
Geh.Reg.-Rat Professor Dr. Walther Nernst (Berlin).
Geheimrat Professor Dr. Wilhelm Ostwald (Grossbothen).
Sir Ernest Rutherford, Kt., O.M., Pres.R.S.
Geheimrat Professor Dr. Otto Wallach (Göttingen).
Geh.Reg.-Rat Professor Dr. Heinrich Wieland (Munich).

The following papers were read:

"The modes of addition to conjugated unsaturated systems. Part II. The reduction of conjugated unsaturated acids by metals

dissolving in aqueous media." By H. BURTON and C. K. INGOLD.

"Synthesis of anthracene homologues. Part I. 2 : 6- and 2 : 7-Dimethylanthracenes." By G. T. MORGAN and E. A. COULSON.

"Synthesis of anthracene homologues. Part II. 2 : 3 : 6-Trimethylanthracene." By G. T. MORGAN and E. A. COULSON.

"Dynamic isomerism involving mobile hydrocarbon radicals. Part I. The triarylbenzenylamidines." By A. W. CHAPMAN.

"Studies of valency. Part XIV. An optically-active telluronium salt; *p*-tolylphenylmethyltelluronium iodide." By T. M. LOWRY and F. L. GILBERT.

"Studies of valency. Part XV. Optically-active *p*-tolylphenyltelluroxide." By T. M. LOWRY and F. L. GILBERT.

SECOND LIVERSIDGE LECTURE.

The second Liversidge Lecture, entitled "Surface Forces and Chemical Equilibria," will be delivered by Professor Dr. H. Freundlich on Thursday, December 12th, 1929, in the Meeting Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1 (by kind permission of the Council of that Institution). Tickets of admission will not be required.

RESEARCH FUND.

A meeting of the Research Fund Committee will be held in December next. Applications for grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Monday, December 2nd, 1929. Applications from Fellows will receive prior consideration.

All persons who received grants in December, 1928, or in December of any previous year, whose accounts have not been declared closed by the Council, are reminded that reports must be returned by December 2nd.

Attention is drawn to the fact that the income arising from the Donation of the Worshipful Company of Goldsmiths is to be more or less especially devoted to the encouragement of research in Inorganic and Metallurgical Chemistry, and that the income from the Perkin Memorial Fund is to be applied to investigations relating to problems connected with the Coal Tar and Allied Industries.

THE HARRISON MEMORIAL PRIZE.

In accordance with the Trust Deed governing the Harrison Memorial Fund, the Selection Committee consisting of the Presidents

of the Chemical Society, the Institute of Chemistry, the Society of Chemical Industry, and the Pharmaceutical Society, will proceed to make an award of the Harrison Prize in December next.

The Prize, of the value of about £150, is to be awarded to the chemist of either sex, being a natural born British subject and not at the time over thirty years of age, who, in the opinion of the Selection Committee, during the previous five years has conducted the most meritorious and promising original investigations in any branch of pure or applied chemistry and published the results of those investigations in a scientific periodical or periodicals.

Provided that, in the opinion of the Selection Committee, there is a candidate of sufficient distinction to warrant an award of the Prize, the next award is to be made in December, 1929.

Applications, five copies of which must be submitted, should contain the following information :

(*a*) Name (in full).
(*b*) Age (birth certificate to accompany application).
(*c*) Degrees (name of University where obtained).
(*d*) Other qualifications.
(*e*) Experience.
(*f*) Titles of published papers, with authors' names, including full references to publications.
(*g*) Where research was carried out.
(*h*) Testimonials or references.
(*i*) Any other information bearing on the application.

The Selection Committee is prepared to receive applications, nominations, or information as to candidates eligible for the Prize. Any such communication must be received by

The President,
The Chemical Society,
Burlington House,
Piccadilly, London, W. 1,

not later than Monday, December 2nd, 1929.

A LIEBIG HOUSE UNION.

A Liebig House Union has been formed at Darmstadt under the presidency of Geheimrat Professor Dr. A. von Weinberg, supported by a strong Committee. The object of the Union is to maintain, as a permanent museum, the birthplace of von Liebig at "Grosse Kaplaneigasse 30," which has recently been rebuilt. It is hoped

to bring together in this museum all the mementos of the great chemist and of the industries with which he was connected. Membership subscriptions are as follows: For ordinary membership at least 20 M., for corporate membership at least 100 M. yearly. Individuals who pay not less than 500 M., or corporations who subscribe at least 2000 M. will be known as "Founders," and will become permanent members of the Union. Members who subscribe more than 20 M. yearly will be entitled to a copy of E. Berl's "Liebigbriefe," and those who subscribe more than 100 M. to a copy of August Kekulé's notebook of Liebig's lecture reproduced in facsimile, so long as it is available. Subscriptions should be made payable to the Union at the Diskonto-Gesellschaft Filiale, Darmstadt.

ANNUAL REPORTS.

The price of the Annual Reports for 1929, Vol. XXVI, will be 5*s*. 6*d*. to those Fellows who apply by December 31st, 1929.

Application should be made to the Assistant Secretary, and must be accompanied by a remittance.

SPECIAL PUBLICATIONS OF THE SOCIETY.

Fellows are reminded that the following publications can be obtained at the reduced prices mentioned:

	Price.
Memorial Lectures, Vol. I (1893–1900) . .	9*s*. post free.
,, ,, Vol. II (1901–1913) . .	7*s*. ,,
Faraday Lectures (1869–1928) . . .	5*s*. 6*d*. ,,
Photographs of Eminent Chemists, set of 8 .	18*s*. ,,
,, ,, ,, each. .	2*s*. 6*d*. ,,

The Council also has a few sets of the *Berichte der Deutschen Chemischen Gesellschaft* from 1915 to 1924 (inclusive) for £22, post free.

BRITISH CHEMICAL ABSTRACTS "A" FOR 1930.

(*Printed on one side of the page only*)

The Abstracts "A" (Pure Chemistry) for 1930, printed on one side of the page only, will be issued to Fellows who make application by December 31st, 1929. On account of the cost of producing

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DISCOVERY OF A DETECTIVE REAGENT OF YPERITE (MUSTARD GAS).

With reference to the notice appearing in the Proceedings for June 1929 (pp. 71 and 72) the Jury appointed to judge the competition is composed of the following:

Geh. Reg.-Rat Professor Dr. F. Haber, Kaiser Wilhelm Instituts, Berlin-Dahlem.

Sir William J. Pope, K.B.E., F.R.S., The University, Cambridge.

Professor F. Swarts, The University, Ghent.

Professor G. Urbain, 1, Rue Victor Cousin, Sorbonne, Paris.

Secretary of the Jury: The Technical Adviser of the International Red Cross Committee.

List of Papers, or Abstracts thereof, received between June 20th, and October 17th, 1929. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"The inhibition of chemical reactions. Part III. The inhibition by sulphur of the atmospheric oxidation of benzaldehyde." By K. C. BAILEY.

"Nitrogen-phosphorus compounds. Some derivatives of diphenylphosphoric acid." By B. BEILENSOHN and R. DICKINSON.

"Chemical preparation of a substance probably living." By H. C. WOODRUFF.

"The action of visible light on the oxidation of lactic and tartaric acids." By F. BERNHEIM.

"The anomalous fifth carbon atom in *n*-fatty nitriles." By R. A. FULTON and W. B. LEE.

"The nitration of aromatic thiocyanates." By F. CHALLENGER, C. HIGGINBOTTOM, and A. HUNTINGTON.

"Studies of the boron–carbon linkage. Part I. The oxidation and nitration of phenylboric acid." By F. CHALLENGER and A. D. AINLEY.

"A modified Reimer–Tiemann reaction. The influence of ring substituents on the aldehyde yields from the action of phenols on an alkaline solution of trichloroacetic acid." By D. E. ARMSTRONG and D. H. RICHARDSON.

"The influence of solvents and of other factors on the rotation of optically active compounds. Part XXVIII. The rotation dispersion of mannitol and some of its derivatives. Note on rotation dispersion curves." By T. S. PATTERSON and A. R. TODD.

"The chemistry of the three-carbon system. Part XXIII. The influence of substituent groups on the tautomeric change." By R. P. LINSTEAD.

"The classification of the sugars. Part II." By J. G. MALTBY.

"The constitution of metal-ion–pyridine complexes in aqueous solution." By F. K. V. KOCH.

"The constitution of carthamin. Part II. β-Carthamidin methyl ether and its synthesis." By C. KURODA.

"A new isomeris mof halogenohydroxybenzoyltoluic acids. Part II. 5(4?)-Methyl-2-(5′-chloro-2′-hydroxybenzoyl)-benzoic acid." By M. HAYASHI.

"A new isomerism of halogenohydroxybenzoyltoluic acids. Part III. 3(6?)-Methyl-2-(3′-chloro-4′-hydroxybenzoyl)-benzoic acid." By M. HAYASHI.

"A new isomerism of halogenohydroxybenzoyltoluic acids. Part IV. 3(6?)-Methyl-2-(4′-chloro-2′-hydroxybenzoyl)-benzoic acid and 3(6?)-methyl-2-(2′-chloro-4′-hydroxybenzoyl)-benzoic acid. (Appendix: 3(6?)-Methyl-2-(2′:5′-dihydroxybenzoyl)-benzoic acid.)" By M. HAYASHI.

"Researches on nitrous oxide." By A. N. C. BENNETT.

"The mechanism of the degradation of fatty acids by mould fungi. Part IV." By V. SUBRAMANIAM, H. B. STENT, and T. K. WALKER.

"A study into the nature of the development of colour by photochemical change in strong solutions of ammonium thiocyanate." By B. S. SHARMA.

"The action of hydrofluoric acid on compounds of selenium and tellurium. Part III. Solubilities of tellurium dioxide and oxyfluorides." By E. B. R. PRIDEAUX and J. O'N. MILLOTT.

"The conversion of acetylchloroaminobenzene into *p*-chloroacetanilide by hydrogen and chlorine ions." By J. W. BELTON.

"The action of sulphur monochloride on antimonypent achloride." By J. R. PARTINGTON.

"Arsenic trichloride and sulphur chloride." By J. R. PARTINGTON.

"Derivatives of dihydropentindole. Part II." By S. G. P. PLANT.

"The relation between chemical affinity and paramagnetism of the elements." By W. E. J. TRASK.

"Researches on ammines. Part III. Derivatives of cupric nitrite." By H. J. S. KING.

"The condensations of benzaldehyde and ethyl acetoacetate with urea and thiourea." By L. E. HINKEL and D. H. HEY.

"The synthesis of glycine." By W. K. ANSLOW and H. KING.

"The formation of *N*-nitrosoamines from tertiary aromatic amines. Part I. The conversion of derivatives of dimethylaniline by nitrous acid into the corresponding nitrosoamines and mono-

methylaniline derivatives." By W. G. Macmillan and T. H. Reade.

"Polynuclear cobalt complexes containing cobalt in the anion." By E. G. V. Percival and W. Wardlaw.

"Complex bromides of quinquevalent molybdenum." By F. G. Angell, R. G. James, and W. Wardlaw.

"Acid and salt effects in catalysed reactions. Part XXII. The influence of inert salts on the secondary dissociation of dibasic acids." By H. M. Dawson and J. E. Smith.

"Germanium. Part VI. An improved method of extracting germanium from germanite." By W. Pugh.

"The 'fine-structure' of certain 'straight-chain' compounds." By W. B. Lee.

"The unsaturation and tautomeric mobility of heterocyclic derivatives. Part I. Benzthiazole, dihydrobenzthiazole, and thiazole derivatives." By R. F. Hunter.

"The effect of hydrogen-ion concentration on the electrode potential of iron." By A. L. McAulay and G. L. White.

"Cyanine dyes from quaternary salts of methyl-α- and -β-naphthathiazoles." By F. M. Hamer.

"The influence of substituents on the benzoin reaction." By H. H. Hodgson and W. Rosenberg.

"Polysaccharides. Part V. Glycogen." By W. N. Haworth, E. L. Hirst, and J. I. Webb.

"The solubilities of *o*- and *p*-nitrophenols in aqueous methyl alcohol solutions at 25° and 40°. Formation of β-*p*-nitrophenol." By J. C. Duff.

"Dyes derived from triazole dicarboxylic acid. The effect of heterocyclic nitrogen on colour." By J. D. Tewari.

"Chemical kinetics of the system $Ag_2CO_3 \rightleftharpoons Ag_2O + CO_2$." By W. D. Spencer and B. Topley.

"The nitrosation of phenols. Part VII. Resorcinol monomethyl ether and *m*-cresol." By H. H. Hodgson and H. Clay.

"The nitration of 3-hydroxy-1 : 4-benz*iso*oxazine and its 7- and 8-acetamido-derivatives." By I. E. Balaban.

"The influence of the sulphur atom on the reactivity of adjacent atoms or groups. Part III. δ- and ε-Chlorosulphides." By G. M. Bennett, F. Heathcote, and A. N. Mosses.

"Studies of a Bredig silver hydrosol." By R. J. Best and A. B. Cox.

"Passivity of metals. Part III. The quantity and distribution of the superficial oxide." By U. R. Evans and J. Stockdale.

"The formation of 1-substituted benziminazoles." By M. A. Phillips.

"The oxidation of α-terpinene with benzoylhydroperoxide." By L. A. Elson, C. S. Gibson, and J. L. Simonsen.

"Monohalogenomononitrotoluenes. Arsenical compounds derived from 3-bromo-4-nitrotoluene." By L. A. Elson, C. S. Gibson, and J. D. A. Johnson.

"10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part XI. Mono-, di-, and tri-methyl derivatives." By C. S. Gibson and J. D. A. Johnson.

"*nor-d*-ψ-Ephedrine, a convenient base for the resolution of externally compensated acids. Resolution of *dl*-benzenesulphonylalanine and of *dl*-*N*-phenylalanineamide-4-arsinic acid." By C. S. Gibson and B. Levin.

"Compounds of the tryparsamide type. Part II. Resolution of *dl*-*N*-2-methylphenylalanineamide-4-arsinic acid." By C. S. Gibson and B. Levin.

"Dimorphism in the aliphatic dicarboxylic acid series (azelaic acid)." By W. A. Caspari.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

Abderhalden, Emil. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. I. Chemische Methoden. Teil 2, II Hälfte, Heft v. Berlin 1929. pp. 2309 to 2584. *M.* 14. (*Recd.* 8/8/29.)

—— —— Abt. XI. Chemische, physikalische und physikalisch-chemische Methoden zur Untersuchung des Bodens und der Pflanze. Teil 4, Heft i. Berlin 1929. pp. 1 to 192. *M.* 10. (*Recd.* 10/8/29.) From the Publishers : Herren Urban & Schwarzenberg.

Britton, Hubert Thomas Stanley. Hydrogen ions : their determination and importance in pure and industrial chemistry. London 1929. pp. xiv + 515. ill. 25*s.* net. (*Recd.* 11/9/29.) From the Publishers : Messrs. Chapman & Hall.

Cellulosechemie. Year VII, etc. Berlin 1926 +. (*For circulation.*) From the Bureau of Chemical Abstracts.

Firth, James Brierley. Physical chemistry. London 1929. pp. vi + 292. ill. 5*s.* 6*d.* net. (*Recd.* 1/8/29.) From the Publishers : The University Tutorial Press, Ltd.

Gesellschaft für Linde's Eismaschinen A.-G. Geschichte. 50 Jahre Kältetechnik 1879–1929. Wiesbaden 1929. pp. 192. ill. (*Recd.* 15/7/29.) From the Society.

Haas, Paul, and Hill, Thomas George. An introduction to the chemistry of plant products. 2nd edition. Vol. II. London 1929. pp. viii + 220. ill. 10*s.* 6*d.* net. (*Recd.* 13/7/29.) From Dr. P. Haas.

INSTITUT INTERNATIONAL DE CHIMIE SOLVAY. Troisième Conseil de Chimie. Rapports et discussions. Paris 1928. pp. xvi + 562. (*Recd.* 26/7/29.) From Dr. E. K. Rideal.

INSTITUTION OF PETROLEUM TECHNOLOGISTS. Standard methods of testing petroleum and its products. 2nd edition. London 1929. pp. xiv + 140. 7*s.* 6*d.* net. (*Recd.* 5/10/29.) From the Institution.

KENDALL, JAMES. At home among the atoms: a first book of congenial chemistry. [New York] 1929. pp. xvi + 270. ill. 7*s.* 6*d.* net. (*Recd.* 18/9/29.)

From the London Publishers: Messrs. G. Bell & Sons.

KOETSCHAU, RUDOLF. Einführung in die theoretische Wirtschaftschemie. Dresden 1929. pp. x + 155. ill. *M.* 12. (*Recd.* 24/6/29.) From the Publisher: Herr Theodor Steinkopff.

KOLTHOFF, ISAAK MAURITS, and MENZEL, HEINRICH. Volumetric analysis. An authorized translation based upon the German text by N. HOWELL FURMAN. Vol. II. New York 1929. pp. xiv + 552. ill. 25*s.* net. (*Recd.* 15/7/29.)

From the London Publishers: Messrs. Chapman & Hall.

MENSCHUTKIN, BORIS NIKOLAEVITSCH. Molecule and atom in chemistry. Moscow 1929. pp. 144. [In Russian.] (*Recd.* 1/7/29.)

—— Studies in general (inorganic) chemistry. Moscow 1929. pp. 600. ill. [In Russian.] (*Recd.* 1/7/29.) From the Author.

NAISH, WILLIAM ARCHIBALD, and CLENNELL, JOHN EDWARD. Select methods of metallurgical analysis. London 1929. pp. xii + 495. ill. 30*s.* net. (*Recd.* 19/9/29.)

From the Publishers: Messrs. Chapman & Hall.

NOÜY, PIERRE LECOMTE DU. Équilibres superficiels des solutions colloïdales. Études de biophysique moléculaire. (Monographies de l'Institut Pasteur.) Paris 1929. pp. 228. ill. 32*fr.* (*Recd.* 29/6/29.) From Mr. Emil Hatschek.

PAPIERFABRIKANT, DER. Wochenschrift für die Papier-, Pappen-, Holz-, Schliff-, Strohstoff-u. Zellstoff-Fabrikation. Year XXVI, etc. Berlin 1928+. (*Reference.*) From the Bureau of Chemical Abstracts.

PHARMACEUTICAL FORMULAS. P.F. Vol. I. Being "The Chemist and Druggist" book of selected formulas from the British, United States and other pharmacopœias, together with non-official formulas from various sources. 10th edition. By SAMUEL WALTER WOOLLEY and GEORGE PETERS FORRESTER. London 1929. pp. xvi + 1146. (*Reference.*) 15*s.* net. From Mr. G. P. Forrester.

REDGROVE, HERBERT STANLEY, and FOAN, GILBERT A. Blonde or brunette? A complete account of the theory and practice of hair-dyeing in all its branches. London 1929. pp. xii + 182. ill. 7*s.* 6*d.* net. (*Recd.* 6/9/29.)

From the Publishers: Messrs. William Heinemann, Ltd.

SOUTH KENSINGTON. *Science Museum.* Handbook of the collections illustrating industrial chemistry. Compiled by ALEXANDER BARCLAY. London 1929. pp. 83. ill. 1*s.* net. (*Recd.* 8/10/29.)
From the Compiler.

TEMPLE, M. S. A survey of the soils of Buckinghamshire. (University of Reading. Faculty of Agriculture. Bulletin 38.) Reading 1929. pp. 130. ill. (*Recd.* 5/7/29.)
From the Dean of the Faculty.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. VI. Part ix. Berlin 1929. pp. 2161 to 2402.
From the Publishers: Herren Urban & Schwarzenberg.

UNITED STATES. *Department of Commerce.* Bureau of Standards Journal of Research. Vol. I, etc. Washington 1928 +. (*For circulation.*) From the Bureau of Chemical Abstracts.

UNIVERSITATIS ASIÆ MEDIÆ. Acta. Series VI. Chemia. No. I, etc. Taschkent 1928 +. (*Reference.*) From the University.

WEST, CLARENCE JAY, and BEROLZHEIMER, D. D. Bibliography of bibliographies on chemistry and chemical technology. First supplement 1924–1928. (Bulletin of the National Research Council, No. 71.) Washington 1929. pp. 161. (*Reference.*) $1.50.
From the National Research Council.

II. *By Purchase.*

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS. Transactions. Index to Vols. I to XV, inclusive. New York 1929. pp. ii + 228. (*Reference.*) 25*s.* net.

AMERICAN PHYSICAL SOCIETY. The Physical Review Supplement. Studies in contemporary physics. Vol. I, etc. Minneapolis 1929 +. (*Reference.*)

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CHEMNITIUS, FRITZ. Die Chemie in Jena von Rolfinck bis Knorr (1629–1921). Jena 1929. pp. 192. ill. *M.* 8. (*Recd.* 1/8/29.)

EITEL, WILHELM. Physikalische Chemie der Silikate. Leipzig 1929. pp. xii + 552. ill. *M.* 63. (*Recd.* 15/7/29.)

FAJANS, KASIMIR, and WÜST, J. Physikalisch-chemisches Praktikum. Leipzig 1929. pp. xvi + 217. ill. *M.* 13.50. (*Recd.* 10/9/29.)

FOSTER, L. E. The cleaning and dyeing of celanese and rayon, including a brief history of rayon and its manufacture. York, Nebraska 1929. pp. 216. ill. 12*s.* 6*d.* net. (*Recd.* 24/6/29.)

FRIEND, JOHN NEWTON. A text-book of inorganic chemistry. Vol. VI. Part iii. Vanadium, niobium, and tantalum. By

SYDNEY MARKS. London 1929. pp. xxvi + 222. (Two copies.) 18*s.* net. (*Recd.* 26/9/29.)

HANDBUCH DER PHYSIK. Edited by HANS GEIGER and KARL SCHEEL. Vol. IV. Allgemeine Grundlagen der Physik. Edited by HANS THIRRING. Berlin 1929. pp. xii + 667. ill. *M.* 63. (*Recd.* 17/7/29.)

—— —— Vol. XXI. Licht und Materie. Edited by HEINRICH KONEN. Berlin 1929. pp. xii + 968. ill. *M.* 96. (*Recd.* 7/10/29.)

HEERMANN, PAUL. Färberei- und textilchemische Untersuchungen. 5th edition. Berlin 1929. pp. viii + 435. ill. *M.* 25.50. (*Recd.* 1/8/29.)

JANDER, GERHARDT, and ZAKOWSKI, JOSEF. Membranfilter, Cella- und Ultrafeinfilter. (Kolloidforschung in Einzeldarstellungen.) Leipzig 1929. pp. ix + 193. ill. *M.* 13. (*Recd.* 15/7/29.)

LEE, [ARTHUR] BOLLES. Microtomist's vade-mecum: a handbook of the methods of microscopic anatomy. 9th edition. Edited by JAMES BRONTË GATENBY and E. V. COWDRY. London 1928. pp. x + 710. ill. 30*s.* net. (*Recd.* 24/6/29.)

LEY, HERMANN, and RAEMISCH, ERICH. Technologie und Wirtschaft der Seide. Berlin 1929. pp. viii + 551. ill. *M.* 66. (*Recd.* 17/7/29.)

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SINGER, LEOPOLD. Anorganische und organische Entfärbungsmittel. Dresden 1929. pp. xii + 251. *M.* 21.50. (*Recd.* 12/7/29.)

UNITED STATES. *Institute for Government Research.* The Bureau of Dairy Industry; its history, activities, and organization. By JENKS CAMERON. Baltimore 1929. pp. x + 74. 7*s.* net. (*Recd.* 24/6/29.)

III. *Pamphlets.*

AHMAD, MAQBŪL. A Persian translation of the eleventh century Arabic alchemical treatise *'Ain aṣ-Ṣan'ah wa 'Aun aṣ-Ṣana'ah.* To which is annexed a note on the chemistry of the processes given in the treatise, by B. B. DATTA. (From the *Mem. Asiatic Soc. Bengal*, 1929, 8.)

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Bulletin No. 42. A soil survey of Block E (Renmark) and Ral Ral (Chaffey) irrigation areas. By J. K. TAYLOR and H. N. ENGLAND. Melbourne 1929. pp. 51. ill.

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Pamphlet No. 12. The cattle tick pest and methods for its eradication. Melbourne 1929. pp. 23.

[BATAVIA.] *Proefstation voor Rubber.* Mededeelingen. No. 32. Plasticiteitsbepalingen bij ruwe rubber. VI. Veranderingen in plasticiteit bij bewaren van de rubber. By OTTO DE VRIES. Batavia 1928. pp. 12.

—— —— —— No. 33. Over het conserveeren van latex met borax. By N. BEUMÉE-NIEUWLAND. Batavia 1928. pp. 12.

—— —— —— No. 34. Coagulatie-verschijnselen bij *Hevea* latex. VII. Verschijnselen in alkalische latex. By OTTO DE VRIES and N. BEUMÉE-NIEUWLAND. Batavia 1928. pp. 18.

—— —— —— No. 35. Room uit latex. II. Rubber bereid uit uitgewasschen room. By OTTO DE VRIES, R. RIEBL, and N. BEUMÉE-NIEUWLAND. Batavia 1928. pp. 17.

—— —— —— No. 36. Rubbergehalte-bepalingen in latex geconserveerd met trinatriumphosphaat en formaline. By W. SPOON and N. BEUMÉE-NIEUWLAND. Batavia 1928. pp. 16.

—— —— —— No. 37. Coagulatieverschijnselen in *Hevea*-latex. VIII. Rubber verkregen door bevriezen van de latex. By OTTO DE VRIES and N. BEUMÉE-NIEUWLAND. Batavia 1928. pp. 11.

—— —— —— No. 38. Onderzoekingen over den meeldauw bij *Hevea Brasiliensis*. By W. BOBILIOFF. Batavia 1929. pp. 43.

—— —— —— No. 39. Onderzoekingen over de roode wortelschimmel bij *Hevea*. By W. BOBILIOFF. Batavia 1929. pp. 20.

—— —— —— No. 40. Coagulatieverschijnselen in *Hevea*-latex. VIII. Invloed van eenige zwaarmetaalzouten op coagulatie en coalescentie. By OTTO DE VRIES and N. BEUMÉE-NIEUWLAND. Batavia 1929. pp. 94. ill.

—— —— —— No. 41. Over het arbeidsverbruik bij crepebereiding. By R. RIEBL. Batavia 1929. pp. 20.

—— —— —— No. 42. Slakken op *Hevea*. By R. MENZEL and T. A. TENGWALL. Batavia 1929. pp. 5.

BERRY, PHILIP A. The estimation of cineol in eucalyptus oil with special reference to the crude oil obtained from *Eucalyptus cneorifolia*. (From the *Australian J. Pharm.*, 1929.) ill.

BERKHOUT, P. J. TEDING VAN. Contribution a l'etude du métabolisme basal chez les habitants des tropiques. (From the *Med. Dienst Volksgesondheid Ned.-Indie*, 1929.)

BURTON, HAROLD, and INGOLD, CHRISTOPHER KELK. The existence and stability of free radicals. (From the *Proc. Leeds Phil. Soc.* (*Sci. Section*), 1929, **1**.)

COWARD, HUBERT FRANK. Explosibility of atmospheres behind stoppings. (From the *Trans. Inst. Min. Eng.*, 1929, 77.)

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PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, November 7th, 1929, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., Past-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	*Died.*
George Bult Francis	6th Nov., 1873.	6th Nov., 1929.
Charles Francis Townsend	2nd Feb., 1888.	12th Aug., 1929.
Thomas Barlow Wood	21st April, 1898.	5th Nov., 1929.

Mr. B. Dudley Sully was formally admitted a Fellow of the Chemical Society.

Forms of recommendation for Fellowship were read for the first time in favour of:

Alfred Edward Aldridge, 16, The Terrace, Wellington, New Zealand.
Herbert Charles Baker, B.Sc., 22, Birchington Road, Kilburn, N.W. 6.
Harry Barron, B.Sc., 25, Shore Road, Hackney, E. 9.
Frank Philip Bowden, M.Sc., Ph.D., Gonville and Caius College, Cambridge.
Stanley Edward Boxer, A.R.C.S., 24, Brigstock Road, Belvedere, Kent.
Frederick Walter Canter, B.Sc., 165, Broadway, Hendon, N.W. 9.
Francis Henry Swinden Curd, B.Sc., Sapperton, Upper Park, Loughton.
John Farquharson, B.Sc., A.I.C., 35, Guilford Street, W.C. 1.
Dorothy Lilian Fox, B.Sc., The Laurels, Creynolds Lane, Monk's Path, Birmingham.
Alfred Harold Holden, B.Sc., 7, Stratford Avenue, Rochdale.
Auguste Victor Keller, Kelacoma Laboratories, Broadwater Road, Welwyn Garden City.
Ellis Lloyd, B.Sc., Ph.D., Christ's College, Cambridge.
Robert Winstanley Lunt, M.Sc., Ph.D., University College, Gower Street, W.C. 1.
Alexander Mackie, B.Sc., Ph.D., The Woodlands, Crescent Road, Crumpsall, Manchester.
Elizabeth Esther Jessie Marler, B.Sc., 4, Edith Road, Kensington, W. 14.
Alfred Ronald Martin, B.Sc., 18, Osborne Road, Forest Gate, E. 7.
Faqir Chand Mathur, M.Sc., Siddeshwari Bhawan, New Delhi, India.
Thakorghai Naranji Mehta, B.A., B.Sc., 24, Queensborough Terrace, W. 2.
James Midgley, M.Sc., A.I.C., Scarsbrook, Natland Road, Kendal.
Agnes Gellatly Mitchell, B.Sc., 26, Ferry Road, Monifieth, Angus.
Walter Mitchell, B.Sc., Southbank, Errol, Perthshire.
James Robertson Myles, B.Sc., The Gorse, Barnhill, Broughty Ferry, Angus.

Donald Waring Powell, B.Sc., 113, Muswell Hill Road, N. 10.
Francis Thomas Garnet Prunty, 32, Crediton Hill, N.W. 6.
Patrick Dunbar Ritchie, B.Sc., 3, Nelson Terrace, Dundee.
Conmar Robinson, Ph.D., A.I.C., 9, Bigwood Road, Hampstead Garden Suburb, N.W. 11.
Ernest Woodhouse Smith, D.Sc., F.I.C., Bradda, Manor Road, Cheam.
Wilfrid Devonshire Spencer, B.Sc., Ph.D., Norton Hall, Norton-on-Tees.
Richard John Stephenson, B.Sc., 85, Vicarage Lane, Seven Kings, Ilford.
Adipudi Vasundhara, B.A., 4, Stanhope Road, Highgate, N. 6.
Clifford Rex Wright, A.R.C.S., 20, Lansdowne Road, Luton, Beds.

The following papers were read:

"The nitration of aromatic thiocyanates." By F. CHALLENGER, C. HIGGINBOTTOM, and A. HUNTINGTON.

"Studies of the boron–carbon linkage. Part I. The oxidation and nitration of phenylboric acid." By F. CHALLENGER and A. D. AINLEY.

"The oxidation of α-terpinene with benzoylhydroperoxide." By L. A. ELSON, C. S. GIBSON, and J. L. SIMONSEN.

"The constitution of cryptal." By A. R. PENFOLD and J. L. SIMONSEN.

Ordinary Scientific Meeting, Thursday, November 21st, 1929, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Clement Ward Lowe.....	Dec. 1st, 1910.	Nov. 7th, 1929.
Samuel Rideal	Dec. 7th, 1882.	Nov. 13th, 1929.

The following announcements were made:

1. The Council had received with thanks the offer to present a Silver Mace to the Society from Mr. Ayerst Henham Hooker, F.I.C., on completing his jubilee as a Fellow.

2. Delegates would represent the Society for the year 1930 as follows:

Professor C. S. Gibson, Mr. A. J. Greenaway, Dr. J. T. Hewitt, and Professor G. T. Morgan, together with the Treasurer (*ex-officio*), on the Bureau of Chemical Abstracts.

Professor C. S. Gibson, Sir William J. Pope, and Professor J. F. Thorpe on the Federal Council for Chemistry.

Professor A. J. Allmand, Professor J. Kendall, and Professor F. G. Donnan on the Editorial Board of the *Journal of Physical Chemistry*.

3. A Conference on Vapour Absorption and Adsorption organised by the Institution of Chemical Engineers would be held in the Rooms of the Chemical Society on Thursday and Friday, December 5th and 6th, 1929, at 10.30 a.m. and 2.30 p.m. on each day.

4. The Report of the Joint Chemical Patents Committee on British Patent Law Reform would be published early next year by the Association of British Chemical Manufacturers. Fellows desiring to purchase this Report, to be sold at about 1*s.* per copy, should apply to Mr. J. Davidson Pratt, Secretary of the Joint Chemical Patents Committee, at the Association of British Chemical Manufacturers, 166, Piccadilly, London, W. 1.

Forms of recommendation for Fellowship were read for the first time in favour of :

Kathleen Mary Collier, 85, Worple Road, Wimbledon, S.W. 19.
Hugh Bouvard Fraser, B.Sc., 32, Lansdowne Crescent, Holland Park, W. 11.
Robert Gaddie, B.Sc., Laguna, Eskbank, Dalkeith, Midlothian.
Heizaburo Kondo, Prof., Pharmaceutical Institute, Imperial University, Tokyo.
Ernest Leton, 60, Brondesbury Park, N.W. 6.
Cecil Graham Traquair Morison, M.A., Pinsgrove, Hinksey Hill, Oxford.
Gordon Van Praagh, B.Sc., 15, Langland Gardens, Hampstead, N.W. 3.
Elsie Ramsden, B.Sc., Lyddon Hall, Virginia Road, Leeds.
George A. Robertson, 146, Holland Street, Glasgow.
Syed Unwar Ullah, B.Sc., c/o S. A. Manzar, Esq., B.A., Patna, Bihar and Orissa, India.
John Hulton Wolfenden, M.A., Exeter College, Oxford.

The following forms of recommendation for Fellowship have been authorised by the Council for presentation to ballot under Bye-Law I (2) :

Robert Bienaimé, 141, Avenue du Roule, Neuilly-sur-Seine.
William Chalmers, M.A., McGill University, Montreal.
Ernest Fourneau, Institut Pasteur, 26, Rue Dutot, Paris.
John Horne Gillies, 1, Elmwood Avenue, Norwood, Delaware, Co., U.S.A.
Wilhelm Gluud, Prof., Dr.Phil., 15, Preussischestrasse, Dortmund, Germany.
John Keene, Dr.Chem., 22, Corso Cavallotti, San Remo.
Jnan Ranjan Sanyal, B.Sc., 239, 37th Street, Rangoon.
Joseph John Sullivan, Prof., S.J., M.A., Ph.D., Boston College, University Heights, Chestnut Hill, Mass., U.S.A.

The following papers were read :

"The rotatory dispersion of organic compounds. Part XIX. The validity of Drude's equation." By T. M. Lowry.

"The influence of the sulphur atom on the reactivity of adjacent atoms or groups. Part III. δ- and ε-Chlorosulphides." By G. M. Bennett, F. Heathcoat, and A. N. Mosses.

"Studies in the penthian series. Part II. Penthian-4-one." By G. M. Bennett and W. B. Waddington.

*

"Studies in the penthian series. Part III. Stereoisomeric derivatives of some penthianols." By G. M. BENNETT and W. B. WADDINGTON.

"A new interpretation of the isomerism amongst co-ordination compounds of platinum." By F. G. ANGELL, H. D. K. DREW, and W. WARDLAW.

SECOND LIVERSIDGE LECTURE.

The second Liversidge Lecture, entitled "Surface Forces and Chemical Equilibria," will be delivered by Professor Dr. H. Freundlich, of Berlin, on Thursday, December 12th, 1929, at 5.30 p.m., in the Meeting Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1. (by kind permission of the Council of that Institution). Tickets of admission will not be required.

ANNUAL REPORTS ON THE PROGRESS OF CHEMISTRY.

The price of the Annual Reports for 1929, Volume XXVI, will be 5*s*. 6*d*. to those Fellows who apply by December 31st, 1929.

Application, accompanied by a remittance, should be made to the Assistant Secretary.

THE LIBRARY.

The Library will be closed for the Christmas Holidays from Tuesday, 24th December, to Saturday, 28th December, inclusive.

List of Papers, or Abstracts thereof, received between October 17th and November 21st, 1929. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal):

"Some intermolecular halogenations." By H. H. HODGSON and A. KERSHAW.

"Studies in the sterol group. Part VIII. The reactions of *iso*-ergosterol." By I. M. HEILBRON and F. S. SPRING.

"Colloidal phenoxides. Part I. The relation between constitution and colloidal properties." By W. BAKER and F. M. EASTWOOD.

"On active nitrogen. Part VII. Further studies on the decay of the nitrogen afterglow." By E. J. B. WILLEY.

"The interfacial tensions between paraffin and some aqueous phases." By R. L. HAMBRIDGE and W. HUGHES.

"The stereoisomeric 2 : 3 : 5 : 6-tetramethylpiperazines. Part I." By F. B. KIPPING.

"The estimation of nicotine." By F. D. CHATTAWAY and G. D. PARKES.

"The interaction of nitroamines with sulphonyl chlorides." By F. BELL.

"The nitration of β-naphthylamine." By F. BELL.

"The interaction of sodamide and alkyl iodides with acetophenone and its homologues." By A. RUSSELL.

"The pyrophosphate method for the determination of magnesium and the temperature of dissociation of magnesium ammonium phosphate." By S. S. MIHOLIC.

"The halogenation of phenolic ethers and anilides. Part I. The bromination of ethers in 50% acetic acid." By A. E. BRADFIELD, B. JONES, and K. J. P. ORTON.

"The reactions of malonic esters with formaldehyde. Part I." By K. N. WELCH.

"Modification of Beilstein's test for halogens in organic compounds." By K. N. WELCH.

"Low-temperature oxidation. Part II. The ignition of some hydrocarbons in oxygen." By J. S. LEWIS.

"The formation of periodic structures by salting-out and by coagulation." By E. S. HEDGES.

"Compounds of the thioparaldehyde type derived from chloral." By F. D. CHATTAWAY and E. G. KELLETT.

"The argentothiosulphuric acids and their derivatives. Part I. The preparation of the sodium salts and the isolation of monoargentomonothiosulphuric acid." By H. BAINES.

"The partial esterification of polyhydric alcohols. Part X. The discovery of the first true β-glyceride, and the unreliability of the supposed structures of certain diglycerides." By A. FAIRBOURNE.

"*dl*-β-Phenyl*iso*propylamine and related compounds. Co-ordination in the α-oximinoketones." By D. H. HEY.

"The interaction of butyl chloral hydrate and 2 : 4-dihalogen-substituted phenylhydrazines." By F. D. CHATTAWAY and H. IRVING.

"The *cis–trans*-ethenoid transformation." By G. R. CLEMO and S. B. GRAHAM.

"Attempts to find new anti-malarials. Introduction." By G. BARGER and R. ROBINSON; and "Part I. Some pyrroloquinoline derivatives." By (Mrs.) G. M. ROBINSON.

"Attempts to find new anti-malarials. Part II. Aminoalkyl quinolinium salts and some related substances." By T. R. SESHADRI.

"Attempts to find new anti-malarials. Part III. Some substituted aminoalkylaminoquinolines." By A. W. BALDWIN.

"Attempts to find new anti-malarials. Part IV. β-Benziminazolylethylamine and β-5(or 6)-ethoxybenziminazolylethylamine." By B. CHATTERJEE.

"The solubility of potassium selenate in water between 0° and 100°." By J. A. N. FRIEND.

"Natural glucosides. Part I. The constitution of phloridzin." By F. R. JOHNSON and A. ROBERTSON.

"Properties of conjugated compounds. Part VIII. The additive formation of *cyclo*hexenes: A reply." By F. H. FARMER and F. L. WARREN.

"The mechanism of cyanoacetamide and cyanoacetic ester condensations." By C. K. INGOLD.

"A synthesis of anthraquinones." By A. FAIRBOURNE and G. E. FOSTER.

"Harmine and harmaline. Part X. The synthesis of 7- and 8-methoxyketotetrahydro-β-carbolines and the constitution of acetylharmaline." By H. S. B. BARRETT, (the late) W. H. PERKIN, jun., and R. ROBINSON.

"6 : 7-Dimethoxyisatin, 5 : 6-methylenedioxyisatin, and the nuclear degradation of 3 : 4-methylenedioxyquinoline." By J. M. GULLAND, R. ROBINSON, J. SCOTT, and S. THORNLEY.

"Stereoisomerism of disulphoxides and related substances. Part V. The dioxides of 3 : 5-dimethylthiolbenzoic acid." By E. V. BELL and G. M. BENNETT.

"Pellitorine, the pungent principle of *Anacyclus pyrethrum*." By J. M. GULLAND and G. U. HOPTON.

"An investigation into the formation of 4(5)-aminoglyoxalines. Part I." By I. E. BALABAN.

"Some characteristic colour reactions of certain diamino- and nitroamino-diphenyl mono- and di-sulphides." By H. H. HODGSON and W. ROSENBERG.

"Nitrations of 2- and 4-nitrophenylpiperidines." By R. J. W. LE FÈVRE.

"Sugar carbonates. Part IV. The dicarbonates of glucose, fructose, mannose, galactose, and arabinose." By W. N. HAWORTH and C. R. PORTER.

"Isolation of crystalline α- and β-ethylglucofuranosides (γ-ethylglucosides) and other crystalline derivatives of glucofuranose." By W. N. HAWORTH and C. R. PORTER.

"The absorption spectra of diphenyl and some derivatives." By T. C. C. ADAM and A. RUSSELL.

"The measurement of the dielectric constants of organic liquids." By A. O. Ball.

"The hydrides of boron." By B. D. Steele and J. E. Mills.

"Dehydration of copper sulphate, $CuSO_4.5H_2O$." By W. E. Garner and M. G. Tanner.

"Acid and salt effects in catalysed reactions. Part XXIII. The catalytic activity of acid salts with reference to the catalytic effects produced by potassium hydrogen oxalate in the acetone iodine reaction." By H. M. Dawson and J. E. Smith.

"The formation of iron pentacarbonyl from coal gas under pressure at the ordinary temperature." By J. A. N. Friend and R. H. Vallance.

"The routine preparation of conductivity waters. Part II." By J. M. Stuart and F. Wormwell.

"Comparison of some physical constants of thiocyanate, azide, and nitrite solutions." By P. Günther and W. Perschke.

"Note on the structure of the isomeric methyl ferrocyanides." By S. Glasstone.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE BALLOT WILL BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, DECEMBER 5th, 1929.

Aldridge, Alfred Edward, Kelbin Chambers, 16, The Terrace, Wellington, New Zealand. British. Consulting Chemist, Bacteriologist. 1912–1918, Pharmaceutical Chemist, qualifying Ph.C. end of war (attendance at Technical College and private tuition). 1920–1922, Research work for Wood Distillation Company. 1922–1927, General Industrial Laboratory experience. 1927–1929, Biochemical and Bacteriological training in Laboratory of Christ Church Public Hospital. Attendance at University for additional training. 1929, Private Practice as Industrial Chemist, etc. (*Signed by*) W. Donovan, Stephen B. Bowyer, R. L. Andrew.

Baker, Herbert Charles, 22, Birchington Road, Kilburn, N.W. 6. British. Research Chemist. B.Sc. (University Coll. London). Wish to keep in touch with modern developments. (*Signed by*) H. Terrey, W. Bradley, K. R. Krishnaswami.

Barent, Mark, 29, Victoria Park Square, E. 2. British. Research Student. B.Sc. (London). One year's research at University College. (*Signed by*) Robert Robinson, T. R. Seshadri, K. N. Menon.

Barron, Harry, 25, Shore Road, Hackney, E. 9. British. Research Chemist. B.Sc., 1st Class Hons. Chem. (East London College). (*Signed by*) J. R. Partington, W. H. Patterson, D. C. Jones.

Bowden, Frank Philip, Gonville and Caius College, Cambridge. British. Research. M.Sc. (Tasmania); Ph.D. (Cambridge); A.Inst.P. Demonstrator in Physics, Tasmania Univ., Overseas 1851 Exhibitioner, International Research Fellow, Senior 1851 Exhibitioner. Papers published (mainly on

Interfacial Potentials): Phil. Mag., **1**, 1282, 1926 (with A. L. McAulay); *Proc. Roy. Soc.*, A, **120**, 59, 1928, and **120**, 80, 1928 (with E. K. Rideal), and A, **125**, 446, 1929; *Trans. Farad. Soc.*, **23**, 571, 1927; **24**, 473, 1928. *J.C.S.*, **127**, 2605, 1925 (with A. L. McAulay). (*Signed by*) T. M. Lowry, Eric K. Rideal, A. F. H. Ward.

Boxer, Stanley Edward, 24, Brigstock Road, Belvedere, Kent. British. Research Student. A.R.C.S. [Lond.] Qualified for B.Sc. Hons. (Lond.) in 1930. Proceeding to Ph.D. Degree by Research in Organic Chemistry. (*Signed by*) Jocelyn Thorpe, R. P. Linstead, A. A. Goldberg.

Briggs, Lindsay Heathcote, Massey Agricultural College, Palmerston North, New Zealand. British. Student. M.Sc. (Hons.). Lecture Demonstrator, Auckland University College, N.Z., 1928. Papers: "The Sesquiterpene Alcohol of the Oil of Eucalyptus, *nova Angelica*," *J. Soc. Chem. Ind.*, 1928, **47**, 323T. "The Chemistry of Aromadendrene," Part I, *J.C.S.*, 1928, 2524. "The Oxidation of Dipinene," *J.C.S.*, 1928, 3118. (All papers with W. F. Short.) (*Signed by*) F. P. Worley, W. F. Short, F. H. McDowall.

Brightman, John Henry, Glencairn, 102, Hodford Road, Golder's Green, N.W. 11. British. Civil Servant (Examiner in H.M. Patent Office). B.Sc. Glasgow. Examiner in charge of Class 72, iron and steel manufacture, in H.M. Patent Office. Science Master before entering Patent Office. Anti-Gas Officer during war, and from July to Dec. 1918 acting British Adviser to the Chemical Warfare Service, United States Army. (*Signed by*) Allan Domleo, O. J. W. Napier, James G. Fife.

Canter, Frederick Walter, 165, Broadway, Hendon, N.W. 9. British. University Student. B.Sc. [1st Class Hons. Chem.], London, 1929. (*Signed by*) J. R. Partington, A. Robertson, D. C. Jones.

Cliffe, Wilfrid Herbert, 1, Main Avenue, Levenshulme, Manchester. British. Technical Representative (Refractory Materials). Research on Dyestuffs, Intermediates, Synthetic Drugs, etc., from 1922 to 1927 at the British Dyestuffs Corporation (Blackley), Ltd., Manchester. For some time Analyst to the Research Dept. Now connected with manufacturers of Refractory Materials. (*Signed by*) E. H. Rodd, W. A. Silvester, F. W. Linch.

Curd, Francis Henry Swinden, Sapperton, Upper Park, Loughton, Essex. British. Research Student in Organic Chemistry. B.Sc., Second Class Honours. East London College. (*Signed by*) J. R. Partington, A. Robertson, F. E. King, D. C. Jones.

Davies, Walter Cule, 9, Grove Place, Penarth, Glam. British. Lecturer in Chemistry, University College, Cardiff. First Class Honours Chemistry 1926; B.Sc. (Wales); Ph.D. (in Chemistry) 1929; Joint Author of the two following papers: "Tertiary Phosphines containing the *n*-Butyl Radical," *J.C.S.*, 1929, p. 33. "Tertiary Phosphines containing the Higher Alkyl Radicals," *J.C.S.*, 1929, p. 1262. (*Signed by*) W. J. Jones, S. T. Bowden, E. P. Perman.

Duce, Charles Edward, "Elsonia," Eling Lane, Totton, Southampton. British. Works Manager and Chief Chemist. 15 Years study and manipulation of Asphalts and Bitumens, specialising in Cuban (Native) Asphalt. (*Signed by*) E. S. Shrapnell-Smith, Frank Smith, T. M. Nightingale.

Farquharson, John, Clyde House, 35, Guilford Street, W.C. 1. British. Research Chemist. B.Sc. Aberdeen, A.I.C. Two years' research experience at Aberdeen University. At present engaged in research at University College, London. Desire to receive publications and to attend meetings. (*Signed by*) F. G. Donnan, S. Barratt, W. Rogie Angus.

Fox, Dorothy Lilian, The Laurels, Creynolds Lane, Monk's Path, nr.

Birmingham. British. Research Student at Bedford College. B.Sc. Gen. Hons. 1927, B.Sc. Hons. Chem. 1928 (London). I wish to receive the Journal and to attend meetings of the Society. (*Signed by*) James F. Spencer, E. E. Turner, J. Cattermole.

GOTHARD, HENRY ALEXANDER SHERWIN, Verbena, Southlands Road, Bickley, Kent. British. Full Technologist. Specialising in the combustion and pre-treatment of Kent coal, in particular that from the "Snowdown Deep Seam." Author of "Pulverised Fuel Firing," a paper read before Inst. Chem. Engs. (Graduates and Students Section), April 26, 1929. (*Signed by*) R. Lessing, C. S. Garland, J. W. Hinchley.

GRAYMORE, JOHN, "Sunrising," Lincoln Road, Newark, Notts. British. Teacher. M.Sc. (Lond.), A.I.C. Senior Lecturer in Science, Newark Technical College, 1927–1929. (*Signed by*) F. S. Kipping, E. B. R. Prideaux, J. B. Firth.

GREENE, FRANK ARNOLD, 50, Clifton Hill, St. John's Wood, N.W. 8. British. Chemical Engineer. M.I.Mech.E., M.I.E.E., M.I.Chem.E. In practice as consulting chemical engineer. (*Signed by*) Jocelyn Thorpe, E. F. Armstrong, Francis H. Carr.

HELLESTRAND, OSCAR VINCENT, 133, St. George's Road, Bexley, New South Wales. British subject. Dietitian to Sanitarium Health Food Co. Diploma from Sydney Sanitarium, which includes Physiology, Anatomy, Organic Chemistry, Dietetics, and allied subjects. I desire to join the Society to keep in touch with recent researches in Chemical Science. In addition to my Diploma work, I have studied the Chemistry of foods at the Dupain Institute for one year, and am at present a student doing further work in Chemistry at the Sydney Technical College. (*Signed by*) Spencer C. G. Moon, George Z. Du Pain, Robt. Grant.

HERSANT, ERIC FRANK, 1, Prince of Wales' Crescent, Chalk Farm, N.W. 1. British. Research Student. B.Pharm. (London). Pharmaceutical Chemist at present engaged on Research in the Laboratories of the Pharmaceutical Society as Ransom Research Fellow. (*Signed by*) Wilfrid H. Linnell, T. E. Wallis, F. H. Lowe.

HOLDEN, ALFRED HAROLD, 7, Stratford Avenue, Rochdale, Lancs. British. Works Chemist and part-time Lecturer (Technical School, Rochdale). B.Sc. Special (Chemistry), London, by reading at University College, Nottingham. (*Signed by*) F. S. Kipping, E. B. R. Prideaux, J. B. Firth.

HUNTER, DUNCAN, 110, Harlaxton Drive, Nottingham. British. Born Retford (Notts), May 21st, 1892. Manager of Messrs. Linium Products Syn., Ltd., Friar Street Works, Nottingham. Research in connection with the preparation of cuprammoniacal solutions of cellulose by new methods and the usage thereof in the manufacture of artificial silk, wool, hair, and other cellulose derivatives; also the preparation of hydro-cellulose from various fibres. 1923–1929, with the above-mentioned firm. Member of Society of Chemical Industry since 1925. (*Signed by*) T. K. Walker, O. Rhys Howell, W. H. Pennington.

JEFFERY, ROBERT EWEN, 9, Greycliffe Avenue, Vaucluse, New South Wales. British. Managing Director. Bardsley's, Ltd., Manufacturing Chemists, 431, Kent Street, Sydney. Associate, Australian Chemical Institute. President, Sydney Technical College Chemical Society. (*Signed by*) Richard W. Challinor, Robert Grant, A. W. Oke, A. R. Penfold.

KELLER, AUGUSTE VICTOR, Kelacoma Laboratories, Broadwater Road, Welwyn Garden City, Herts. British. Technical Director. Patentee of several Chemical and other patents. Desirous of consulting the library and

keeping in touch modern developments. (*Signed by*) James Taylor, H. C. Roberts, Edgar W. Foll.

KURODA, MISS CHIKA, 970, Minami-Somei, Sugamo, Tokyo. Japanese. Professor of the Tokyo Higher Normal School for Women; Associate of the Institute of Physical and Chemical Research. Doctor of Science (Tohoku Imperial University, Sendai, Japan). Studies on the organic colouring matters; two years' research in Organic Chemistry under Prof. W. H. Perkin at Oxford University. "Derivatives of Phthalonic Acid, 4 : 5-Dimethoxyphthalonic Acid and 4 : 5-Dimethoxy-*o*-tolyl-glyoxylic Acid" (*J.C.S.*, **123**, 2094, 1923). (*Signed by*) Joji Sakurai, E. Hope, Riko Majima.

LEVY, LEOPOLD FERDINAND, University College, London, and c/o I. A. Harris, 27, Wilmot Road, Downhills Park, N. 17. British. Research Student. M.Sc. with distinction. Two years' research work in Organic Chemistry at the University of the Witwatersrand, Johannesburg, South Africa. (*Signed by*) J. A. Wilkinson, Henry Stephen, O. G. Backeberg, R. Robinson.

LLOYD, ELLIS, Christ's College, Cambridge. British. Research Student. B.Sc. (Wales); Ph.D. (Wales). Research on "Equilibrium between Alcohols and Salts, Part II," *J.C.S.*, 1928, 658. (*Signed by*) T. M. Lowry, Eric K. Rideal, D. C. Jones.

LUNT, ROBERT WINSTANLEY, University College, Gower Street, London, W.C. 1. British. Hon. Lecturer in Chemistry, University College, London. M.Sc., Ph.D. (Liverpool). Communications mainly relating to reactions in electric discharges (some in collaboration): *Proc. Roy. Soc.*, A, **108**, 172, 1925; *J.C.S.*, 1925, **127**, 2050; 1927, 857; 1929, 1712; *Phil. Mag.*, XLIX, 1238, 1925; II, 314, 1926; III, 1025, 1927; *Trans. Farad. Soc.*, **23**, 57, 1927; "The Dielectric Constants of Benzene, etc.," *Proc. Roy. Soc.*, A (in the press). (*Signed by*) F. G. Donnan, H. Terrey, L. F. Gilbert.

MACKIE, ALEXANDER, The Woodlands, Crescent Road, Crumpsall, Manchester. Scottish. Chemist. B.Sc. (2nd Class Honours) and Ph.D. (Edinburgh), A.I.C. Assistant in Chemistry, University of Edinburgh, 1928–1929. Joint publications: "Alternating Reactive Positions in the Nucleus of *tert.*-Butylbenzene," *J.C.S.*, 1928, 2334; "The Nitration of *m*-Acetamido-*tert.*-Butylbenzene," *J.C.S.*, 1929, 476. (*Signed by*) John B. Shoesmith, H. Gordon Rule, J. A. V. Butler.

MCLEOD, ALBERT REGINALD, T. & G. Building Elizabeth Street, Sydney, N.S.W., Australia. British born. Research Chemist for Chiller's Ltd. Mem. of the Government Transport Board. M.B., M.D., C.M., Queen's—Toronto (1909); Scholar Boston Univ. (1907); Scholar Univ. of Chicago (1906); Dip. Anal. Chem. (1905); F.R.M.S. (1905) London; Fell. Science, London (1905). Knight Ord. Hesse, "Officer" Order of St. John. Some time Capt. and Hon. Major, A.I.F. Some time Capt. R.A.M.C. (*Signed by*) A. W. Dye, George Z. Du Pain, Edmond Samuels.

MALLOCH, JOHN GORDON, University of Alberta, Edmonton, Alberta, Canada. Canadian. Research Assistant in Plant Biochemistry. B.Sc. (Alberta, 1924); M.Sc. (Alberta, 1926); Ph.D. (Minnesota, 1928). Appointed assistant in charge of research in cereal chemistry, Department of Field Crops, University of Alberta 1924, and as research assistant in charge of the Plant Biochemistry Laboratories of that department in 1927. (*Signed by*) Alfred E. Macintyre, Alfred Tingle, Frank T. Shutt.

MARLER, ELIZABETH ESTHER JESSIE, 4, Edith Road, Kensington, W. 14. British. Research Student. B.Sc. [Hons. Chemistry], Bedford College, London. I wish to receive the Journal and attend the meetings of the Society. (*Signed by*) James F. Spencer, E. E. Turner, R. V. Henley.

MARSHALL, FREDERICK CECIL BARRON, 91, Calabria Road, N. 5. British. Chemist. B.Sc. (London), 1st Class Honours. Student for 4 years. Since matriculating at Northern Polytechnic, Holloway, under Dr. T. J. Drakeley. Desire to study under Dr. R. F. Hunter of Imperial College for Ph.D. by research. (*Signed by*) T. J. Drakeley, H. J. S. King, R. F. Hunter.

MARTIN, ALFRED RONALD, 18, Osborne Road, Forest Gate, E. 7. British. Research Student. B.Sc. (London), (1st Class). Research Student in Organic Chemistry. (*Signed by*) J. R. Partington, D. C. Jones, A. Robertson.

MATHIAS, OWEN, c/o The British India Corporation, Ltd., Cawnpore, India. Home address: "Glenvilla," 28, Stanley Road, Whalley, Whalley Range, Manchester. Welsh. Chief Chemist, British India Corporation, Ltd. B.Sc. Tech. (2nd Hons.); M.Sc.Tech.; A.I.C. 1922–1923 Research under Dr. F. M. Rowe, for M.Sc. by presentation of thesis on "The Action of Formaldehyde in Acid, Neutral, and Alkaline Solutions on *ar.*-Tetrahydro-α-naphthylene." 1923–1924 continued research with Dr. Rowe, until obtained industrial situation. 1924–1925 Works Chemist, Hillcrest Oil Co., Clayton, Manchester. 1925–1927 Asst. Chemist, Rivers Dept. (Davyhulme Sewage Works), Manchester Corporation. 1927–1929 Research Chemist, B.I.C., Ltd., Cawnpore. 1929 appointed Chief Chemist, B.I.C., Ltd., Cawnpore. (*Signed by*) F. M. Rowe, Frank Lee Pyman, John K. Wood.

MATHUR, FAQIR CHAND, Siddeshwari Bhawan, New Delhi, India. Indian. Research Student. M.Sc. (Punjab) India. (*Signed by*) R. Robinson, R. J. W. Le Fèvre, O. L. Brady.

MEHTA, THAKORGHAI NARANJI, 24, Queensborough Terrace, W. 2. Indian. Student. B.A. (1st Class Hons. Bombay), B.Sc. (2nd Class, Bombay). (*Signed by*) Jocelyn Thorpe, E. H. Farmer, R. D. Desai.

MIDGLEY, JAMES. "Scarsbrook," Natland Road, Kendal. British. Science Master. B.Sc., M.Sc. (Leeds). A.I.C. Sept. 1st, 1914 to Nov. 8th, 1915, Lecturer in Chemistry, Dewsbury Technical College. Nov. 8, 1915 to Feb. 1916, in charge of Works Laboratory, Brotherton & Co., Stourton Works, Leeds. Feb. 1916 to June 1918, Acids Manager, H.M. Factory, Litherland, Liverpool. June 1918 to Oct. 1920, Research Chemist, British Dyes, Ltd., Huddersfield. May 3rd, 1921 to present time, Senior Science Master, Stramongate School, Kendal. (*Signed by*) H. M. Dawson, W. Lowson, W. A. Wightman.

MILLER, ERNEST JOHN, 128, Lozells Road, Handsworth, Birmingham. British. Research Chemist. B.Sc. (Hons.), Birmingham. Plus 3 years research. Ph.D. exam. will be taken this October. Publications: "The Structure of the Normal and γ-Forms of Tetramethyl Glucose. Oxidation of Tetramethyl δ- and γ-Gluconolactones" (*J.C.S.*, 1927, 2436–2443). (*Signed by*) E. L. Hirst, H. D. K. Drew, H. G. Bott.

MITCHELL, AGNES GELLATLY, 26, Ferry Road, Monifieth, Angus, Scotland. British. Research Student. B.Sc. (St. Andrews) with 1st Class Hons. in Chemistry. Carnegie Research Fellow. Publications: *Biochem. Zeit.*, 1929, **208**, 456, 471. (*Signed by*) Alex. McKenzie, John D. M. Ross, Isobel A. Smith, Robert Roger.

MITCHELL, WALTER, Southbank, Errol, Perthshire, Scotland. Scottish. Research Student. B.Sc. (1st Class Hons. in Chemistry), University of St. Andrews. Carnegie Research Fellow. (*Signed by*) Alex. McKenzie, John D. M. Ross, Isobel A. Smith, Robert Roger.

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at Birmingham Technical Institute and at London College of Chemistry. (*Signed by*) Fred H. Webb, Chas. H. Maile, J. M. Edwards.

MYLES, JAMES ROBERTSON, The Gorse, Barnhill, Broughty Ferry, Angus. Scottish. Research Student. B.Sc. (St. And.) with 1st Class Hons. in Chemistry. Carnegie Research Scholar. (*Signed by*) Alex. McKenzie, John D. M. Ross, Isobel A. Smith, Robert Roger.

PAL, BASANTA KUMAR, Chemistry Department, Intermediate College, Mandalay, Burma. Indian. Lecturer in Chemistry; Intermediate College, Mandalay. Master of Science, Calcutta University, 1924. Student of the Presidency College, Calcutta. Assistant Lecturer of Chemistry, University College, Rangoon, 1925–27. Lecturer of Chemistry, Govt. Intermediate College; Mandalay, since 1927. Have submitted research paper "Sur Quelques Molybdates de Cobaltiammines et Quelques Molybdato-cobaltiammines," *Annales de Chemie*, 1926. (*Signed by*) D. H. Peacock, Upo Shin, J. N. Mukherjee.

POWELL, DONALD WARING, "Elmcroft," 113, Muswell Hill Road, N. 10. British. Chemist. B.Sc., U.C.L. Thesis for M.Sc. in course of preparation. I wish to keep in touch with the latest developments of Chemistry. (*Signed by*) Henry Terrey, R. Robinson, K. R. Krishnaswami.

PRUNTY, FRANCIS THOMAS GARNET, 32, Crediton Hill, N.W. 6. English. Student. I am a student at Trinity College, Cambridge, an exhibitioner of the College, and intend to become a biochemist. I wish to keep in touch with developments on the subject with an ultimate view to research, and desire access to the library and lectures accordingly. (*Signed by*) Leslie N. Brown, Robert Robertson, F. M. Porter, W. Lester S. Alton.

RAO, BASBUR SANJIVA, Central College, Bangalore, South India. Indian. Professor of Chemistry. B.A. and M.A., Madras University, India. Ph.D., London University. Teaching chemistry for the last thirteen years. Awarded a prize by the Mysore University for research in Chemistry. Usher and Rao (*J.C.S.*, 1917, **111**, 799). (*Signed by*) M. O. Forster, H. E. Watson, S. G. Sastry.

RICHARDS, ERIC SAMUEL, 33, Price Street, Smethwick, Staffs. British Subject. Analytical Chemist. Certificates of U.E.I. for Chemistry and Metallurgy (Smethwick Technical College). One time Student at Smethwick and Aston Technical Schools, was assistant analytical Chemist at two works in Smethwick, and 3½ years' experience in a Public Analyst's Laboratory, being a former pupil of Mr. J. Lones, F.I.C., F.C.S. (*Signed by*) V. S. George, Joseph Lones, Arthur Adams.

RITCHIE, PATRICK DUNBAR, 3, Nelson Terrace, Dundee. British. Research Student. B.Sc. (St. Andrews) with 1st Class Hons. in Chemistry. Carnegie Research Scholar. (*Signed by*) Alex. McKenzie, John D. M. Ross, Isobel A. Smith, Robert Roger.

ROBINSON, CONMAR, 9, Bigwood Road, Hampstead Garden Suburb, N.W. 11. British. Research Chemist, Imperial Chemical Industries, Ltd. Associate of the Royal College of Science for Ireland; Ph.D. (Utrecht); A.I.C. Publications: "Lyopilic Colloids and Poiseuille's Law," Kruyt and Robinson, *Proc. Roy. Acad. Amsterdam*, **27**, 886 (1925); "Lyotropy," Kruyt and Robinson, *Proc. Roy. Acad. Amsterdam*, **29**, 1244 (1926); "The Lyotropic Series," *Dissertation*, Utrecht (1929); "Estimation of Nitro-bodies with Titanous Chloride," Kolthoff and Robinson, *Rec. trav. chim. des Pays-Bas*, **46**, 169 (1926). (*Signed by*) Henry Terrey, Oswald J. Walker, R. J. W. Le Fèvre.

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S.W. 7. British Indian. Research Student at University College, London. B.A., M.Sc. (Bombay University). 1921–24, Research scholar at the Indian Institute of Science, Bangalore. Since 1924, Assistant Lecturer in Chemistry at the Royal Institute of Science, Bombay. Published two papers: (1) "Influence of *s*-Trinitrobenzene on Reactions involving Arylamines," *J. Ind. Inst. Sc.*, 1922, 29–35; (2) "Condensation of Chloroform and Carbon Tetrachloride with Aromatic Amines," *J. Ind. Inst. Sc.*, 1924, 205–223. (*Signed by*) Robert Robinson, K. N. Menon, R. D. Desai.

SHARPLES, FRANK, 985, Middleton Road, Chadderton, Oldham. British. Chief Chemist, Messrs. J. Chadwick & Co., Oldham, Bleachers and Dyers. Assoc. M.C.T. I am desirous to become a Fellow of the Chemical Society in order to attend meetings, receive publications, and to use the Library. (*Signed by*) David Cardwell, John K. Wood, E. L. Rhead.

SMITH, ERNEST WOODHOUSE, Bradda, Manor Road, Cheam, Surrey. British. D.Sc., F.I.C. (*Signed by*) C. S. Gibson, Jocelyn Thorpe, Francis H. Carr.

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STANSFIELD, ROGER, 48, Virginia Avenue, Eden Terrace, Auckland, New Zealand. British. Employed in Chemical Laboratory of the Auckland Gas Co., Ltd. At present studying for B.Sc. degree and intend ultimately to proceed to research. (*Signed by*) W. Frank Short, F. P. Worley, J. C. Andrews.

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TELFORD, ALFRED PATTINSON, 140, Harrowby Street, Liverpool, S. British. Chief of Staff of firm of Alfred Smetham, Analytical Chemists. For eighteen years engaged in chemical work in the laboratory of the late Alfred Smethan, F.I.C., F.C.S., and F. Robertson Dodd, F.I.C., F.C.S., being now chief of the staff. Three years (war service) bacteriologist under Major W. Leslie Lyall, M.B., F.R.C.P., Australian Voluntary Hospital, Boulogne. (*Signed by*) F. Robertson Dodd, James Smith, C. Durham Garbutt.

THOMPSON, FREDERICK CHARLES, 16, Springfield Mount, Leeds. British. Lecturer in Appl. Chemistry (Leather Manufr.), University of Leeds. M.Sc., Leeds. Member of teaching staff, Leather Industries Dept., University of Leeds, since 1913. Papers on Tannin Analysis, etc., in *J. Soc. Leather Trades, Chem.*, 1921, 389; 1923, 394; 1926, 195, 405; and others. (*Signed by*) C. K. Ingold, J. W. Baker, H. Burton.

TREMAIN, ALBERT REUBEN, c/o Australian Institute of Tropical Medicine, Townsville, North Queensland, Australia. Australian. Analytical Chemist and Bacteriologist. B.Sc. (Hon.), Melbourne, Australia. Major subjects Chemistry, Physiology and Bacteriology. I am at present employed as the Technical Assistant in the Commonwealth Health Laboratory at the above address. (*Signed by*) W. Davies, E. J. Hartung, W. Heber Green.

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VASUNDHARA, ADIPUDI, 4, Stanhope Road, Highgate, N. 6. Indian. Student of Chemistry. B.A. (Hons.) in Chemistry with Tinctorial Chemistry as special subject, from Madras, South India. Wish to attend the meetings of the Society and to receive the Journal. (*Signed by*) James F. Spencer, E. E. Turner, R. V. Henley.

VICKERY, HUBERT BRADFORD, Connecticut Agricultural Experiment Station, New Haven, Connecticut, U.S.A. Canadian. Biochemist. B.A., Dalhousie, 1915; M.Sc., Dalhousie, 1918; Ph.D., Yale, 1922. Investigations of proteins, of the properties of amino-acids, and of methods for their separation. Investigations of the nitrogenous substances occurring in plant cells. Lecturer on the Chemistry of Proteins at Yale University. Research Associate of the Carnegie Institution of Washington, D.C. (*Signed by*) R. K. Cannan, J. C. Drummond, John Pryde.

WRIGHT, CLIFFORD REX, "The Lindens," 20, Lansdowne Road, Luton, Beds. British by birth. Research Student. A.R.C.S. (2nd Class Hons.). Working for Diploma of the Imperial College by Organic Chemistry research. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, R. P. Linstead.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

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BIENAIMÉ, ROBERT, 141, Avenue du Roule, Neuilly-sur-Seine. Français. Directeur de la Parfumerie, Houbigant. (*Signed by*) C. S. Gibson.

CHALMERS, WILLIAM, Dept. of Chemistry, McGill University, Montreal, Canada. Scotch. Graduate Student. B.A., M.A. University of British Columbia. Two papers, published in *Trans. Roy. Soc. Canada*, 3rd Series, XX, 337, and 3rd Series, XXII, 69. Candidate for the degree of Ph.D. at McGill University. Canadian Government research fellow. (*Signed by*) Alfred Stansfield.

FOURNEAU, ERNEST, Institut Pasteur, 26, rue Dutot, Paris, XV^e^. Français. Chef de laboratoire à l'Institut Pasteur. (*Signed by*) C. S. Gibson, A. Chaston Chapman.

GAULT, Professor HENRI, Société des Usines Chimiques Rhône-Poulenc, St. Fons (Rhône), France. French. Scientific Director of Chemical Research in the above company and Professor in the University of Strasbourg. Membre de la Sté Chimique de France, Sté de Chimie Industrielle, Deutsche Chemische

Gesellschaft, American Chemical Society, Institution of Petroleum Technologists. (*Signed by*) W. J. Pope.

GILLIES, JOHN HORNE, 1, Elmwood Avenue, Norwood, Delaware County, Pennsylvania, U.S.A. British subject. Analytical Chemist. "A.M.A.Sc." Academician, Maryland Academy of Sciences. Assistant Chemist, three years, R. R. Tatlock & Thomson, Analytical Chemists, Glasgow, Scotland (Analysis of Food and Drugs). Assistant Chemist, one year, Wiley & Co., Inc., Analytical Chemists, Baltimore, Md., U.S.A. (analysis of fertilisers and fertiliser materials). Chemist, two years, Bowker Chemical Company, Baltimore, Md., U.S.A. (analysis of insecticides and fungicides). Chemist, Research Department, General Electrical Company (U.S.A.), Philadelphia Works, Pennsylvania, U.S.A. (ferrous and non-ferrous alloys, oils, and paints) present position. (*Signed by*) R. T. Thomson, Alfred R. Campbell.

GLUUD, WILHELM, Preussischestr. 15, Dortmund-Eving, Germany. Deutsch. Chemiker Direktor der Ges. f. Kohlentechnik, Dortmund-Eving a.o. Professor a.d. Universität, Münster i/W. Dr. phil. *J.C.S.*, 1913, **103**, 940, 1251, 1530; *Proc. Chem. Soc.*, 1913, **29**, 177. (*Signed by*) Jocelyn Thorpe.

GRANT, THOMAS ALEXANDER, 63, East Street, Kingston, Jamaica, B.W.I. British Subject. Pharmaceutical Chemist. Registered Pharmaceutical Chemist and recognised Teacher of Pharmacy by the Government of Jamaica. (*Signed by*) Geo. A. Pemberton Wright.

KEENE, JOHN, 80, Muswell Hill Road, N. 10, and 22, Corso Cavallotti, San Remo, Italy. British. Doctor of Chemistry, Royal University of Pisa, Italy. (*Signed by*) P. H. Woodnoth, J. G. Everett.

SANYAL, JNAN RANJAN, 239/37th Street, Rangoon, Burma. Indian (Bengalee). Assistant Chemist, Harcourt Butler Institution of Public Health, Burma. B.Sc. (Calcutta) in 1921. Chemist in Roy B. C. Banerjee's Dyeing Factory, Naihati, Bengal, for over one year. Officiated as Assistant Chemist in Harcourt Butler Institute of Public Health for eight months in 1928. (*Signed by*) Mg. Thein Kin, Ganesh Chandra Moitra.

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ABSTRACT OF THE LITERATURE OF INDUSTRIAL HYGIENE. Supplementary to the Journal of Industrial Hygiene. Vol. X, No. 7, etc. Boston, Mass. 1928 +. (*Reference.*)

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JOURNAL OF INDUSTRIAL HYGIENE. Vol. X, No. 7, etc. Boston, Mass. 1928 +. (*Reference.*)

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RÉUNION INTERNATIONALE DE CHIMIE PHYSIQUE. Paris, 8—12 Octobre, 1928. Rapports et discussions. [Activation et structure des molécules.] Paris 1929. pp. xii + 572. ill. (*Recd*. 14/11/29.)

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EYKMAN, C. La métabolisme basal des habitants des pays tropicaux. (From the *Med. Dienst Volksgesondheid Ned.-Indië*, 1928.)

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GIBBS, HARRY DRAKE, HALL, W. L., and CLARK, WILLIAM MANSFIELD. Studies on oxidation-reduction. XIII. Preparation of indophenols which may be used as oxidation-reduction indicators. (*U.S. Public Health Reports*, 1928, Supplement No. 69.)

GJALDBÆK, J. K. Undersøgelser over stødpudeantiseptika. I–III. (From the *Dansk Tids. Farm.*, 1929.) [In Danish. English summaries.]

HALL, WALLACE L., PREISLER, PAUL W., and COHEN, BARNETT. Studies on oxidation-reduction. XIV. Equilibrium potentials of 2,6-dibromobenzenone indophenol-2′-sodium sulphonate, 2,6-dibromobenzenone indophenol-3′-sodium sulphonate, 2,6-dichlorobenzenone indo-2′-chlorophenol, and 2,6-dimethylbenzenone indophenol. (*U.S. Public Health Reports*, 1928, Supplement No. 71.)

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LANG, KARL. Ueber thermische Reaktionen reiner organischer Substanzen unter hohem Wasserstoffdruck. Inaugural-Dissertation. Breslau 1929. pp. 41. ill.

MARUSAWA, TSUNEYA, NAITO, DEN-ICHI, and UCHIDA, JUN-ICHI. Beiträge zur Kenntnis des Sulfitzellstoff-Kochverfahrens. I Mitteilung. Ueber die Einwirkung der Bisulfitlösungen auf Zuckerarten. (From the *Mem. Ryojun Coll. Eng.*, 1929, **1**.)

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 52. The pressure produced on blowing electric fuse links and striking electric arcs in closed vessels. By G. ALLSOP. London 1929. pp. 19. ill.

—— —— Paper No. 53. The ignition of firedamp. (A revision of S.M.R.B. Paper No. 8 of 1925.) By HUBERT FRANK COWARD and RICHARD VERNON WHEELER. London 1929. pp. 40. ill.

—— —— Paper No. 54. The ignition of firedamp by the heat of impact of metal against rock. By MAURICE JOHN BURGESS and RICHARD VERNON WHEELER. London 1929. pp. 25. ill.

MINISTRY OF HEALTH. Methods of chemical analysis as applied to sewage and sewage effluents. London 1929. pp. x + 71. ill.

MOIR, JAMES. Colour and chemical constitution. Part XXIV. A complete investigation of the triphenylcarbinol or "aniline" dyes. (From the *Trans. Roy. Soc. S. Africa*, 1928, **17**.)

MORANI, VALENTINO. Ricerche sull'olio essenziale di "*Salvia officinalis L.*" (From the *Nuovi Ann. Agric.*, 1927, **7**.)

NATIONAL JOINT INDUSTRIAL COUNCIL FOR THE FLOUR-MILLING INDUSTRY. Technical Education Series. Pamphlet No. 3. Flour quality, its nature and control. By ERNEST ARTHUR FISHER. London 1929. pp. 56.

OBINATA, ICHIJI. On the self-hardening property of chromium steel. (From the *Mem. Ryojun Coll. Eng.*, 1928, **1**.) ill.

OGURA, TSUTOMU. Some dyke-rocks in Japan. (From the *Mem. Ryojun Coll. Eng.*, 1928, **1**.) ill.

PENFOLD, ARTHUR RAMON. Preliminary note on the chemistry of concrete otto of *Boronia megastigma* (Nees). (From the *J. Roy. Soc. W. Australia*, 1927, **14**.)

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Food Investigation.* Special Report No. 33. A critical and historical study of the pectic substances of plants. By MARJORY HARRIOTTE BRANFOOT (M. H. CARRÉ). London 1929. pp. x + 154. ill.

—— —— Special Report No. 35. Heat insulators. Report by the Engineering Committee on experiments made at the National Physical Laboratory by EZER GRIFFITHS. London 1929. pp. viii + 96. ill.

CHNOLOGY DEPT.

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PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, December 5th, 1929, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Nadirshaw A. Masani	June 20th, 1912.	1918.
Hartley Shaw	May 6th, 1920.	March 6th, 1929.

The following announcement was made:

The Biochemical Society will hold a Dinner in honour of the four Nobel Laureates in Medicine and Chemistry, 1929, on Monday, February 3rd, 1930, at King Edward VII Rooms, Hotel Victoria, Northumberland Avenue, London, W.C. Sir Charles J. Martin, C.M.G., F.R.S., will preside and the guests of honour will be Professor C. Eijkman, Professor Hans von Euler, Professor Arthur Harden, F.R.S., Professor Sir Frederick Gowland Hopkins, F.R.S. Tickets for the Dinner will be 12*s.* 6*d.* each inclusive of gratuities, but exclusive of wines. Fellows of the Chemical Society, who are not members of the Biochemical Society, desiring to attend the Dinner should apply to Dr. C. R. Harington, "Greenfield," Boxmoor, Herts. enclosing remittance.

The number of tickets is limited, and applications will be dealt with in the order in which they are received. In no case can applications received after Monday, January 20th, 1930, be considered.

The following were formally admitted Fellows of the Chemical Society: C. S. Hicks, John V. Loach, C. G. Anderson, F. E. King, G. Discombe.

Forms of recommendation for Fellowship were read for the first time in favour of:

John Stuart Anderson, B.Sc., A.R.C.S., 42, Grosvenor Road, Highbury, N. 5.
Thomas Stewart Brechin, c/o Messrs. Miller & Co., Kandy, Ceylon.
Geoffrey Herbert Cheesman, B.Sc., A.R.C.S., 9, Compton Road, Wimbledon, S.W. 19.
Howard Augustus Costigan, Ph.D., 280, Wellington Road North, Heaton Chapel, Stockport.
John Malcolm Davies, 33, Boverton Street, Cardiff.
John Edward Mills, M.Sc., 164, Willesden Lane, N.W. 6.
George Christopher Hewson, Arran Street, Ballina, co. Mayo.
Marjorie Winifred Odell, B.Sc., A.R.C.S., 67, Marlowes, Hemel Hempstead.
Rosa Schalit, B.Sc., A.R.C.S., 41, Eton Avenue, N.W. 3.
Florence Mary Ellaline Shepherd, M.Sc., 54, Craignair Road, Tulse Hill, S.W. 2.
Albert Edward Williams, 38, Cavendish Road, Chorlton-cum-Hardy, Manchester.
Bernard Wyman, B.A., c/o Messrs. Brunner Mond & Co., Winnington Works, Northwich.

Mr. H. Paget and Dr. J. G. F. Druce were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently duly elected as Fellows :

Alfred Edward Aldridge.
Herbert Charles Baker, B.Sc.
Atulpati Banerji, L.M.F.
Mark Barent, B.Sc.
Harry Barron, B.Sc.
Robert Bienaimé.
Frank Philip Bowden, M.Sc., Ph.D.
Stanley Edward Boxer, A.R.C.S.
Lindsay Heathcote Briggs, M.Sc.
John Henry Brightman, B.Sc.
Frederick Walter Canter, B.Sc.
William Chalmers, M.A.
Wilfrid Herbert Cliffe.
Francis Henry Swinden Curd, B.Sc.
Walter Cule Davies, B.Sc., Ph.D.
Charles Edward Duce.
John Farquharson, B.Sc., A.I.C.
Ernest Fourneau.
Dorothy Lilian Fox, B.Sc.
Henri Gault.
John Horne Gillies, A.M.A.Sc.
Wilhelm Gluud, Dr. Phil.
Henry Alexander Sherwin Gothard.
Thomas Alexander Grant.
John Graymore, M.Sc., A.I.C.
Frank Arnold Greene, M.I.Mech.E., M.I.E.E., M.I.Chem.E.
Oscar Vincent Hellestrand.
Eric Frank Hersant, B.Pharm.
Alfred Harold Holden, B.Sc.
Duncan Hunter.
Robert Ewen Jeffery.
John Keene, D.Chem.
Auguste Victor Keller.
Chika Kuroda, D.Sc.
Leopold Ferdinand Levy, M.Sc.
Ellis Lloyd, B.Sc., Ph.D.
Robert Winstanley Lunt, M.Sc., Ph.D.
Alexander Mackie, Ph.D., A.I.C.
Albert Reginald McLeod, M.D., C.M.
John Gordon Malloch, M.Sc., Ph.D.
Elizabeth Esther Jessie Marler, B.Sc.
Frederick Cecil Barron Marshall, B.Sc.
Alfred Ronald Martin, B.Sc.
Owen Mathias, M.Sc.Tech., A.I.C.
Faqir Chand Mathur, M.Sc.
Thakorghai Naranji Mehta, B.A., B.Sc.
James Midgley, M.Sc., A.I.C.
Ernest John Miller, B.Sc.
Agnes Gellatly Mitchell, B.Sc.
Walter Mitchell, B.Sc.
Arthur Williams Morgan.
James Robertson Myles, B.Sc.
Basanta Kumar Pal, M.Sc.
Donald Waring Powell, B.Sc.
Francis Thomas Garnet Prunty.
Basrur Sanjiva Rao, M.A., Ph.D.
Eric Samuel Richards.
Patrick Dunbar Ritchie, B.Sc.
Conmar Robinson, Ph.D., A.I.C.

Jnan Ranjan Sanyal, B.Sc.
Ramanlal Chhaganlal Shah, B.A., M.Sc.
Frank Sharples, Assoc. M.C.T.
Ernest Woodhouse Smith, D.Sc., F.I.C.
Wilfrid Devonshire Spencer, Ph.D.
Roger Stansfield.
Richard John Stephenson, B.Sc.
Katherine Frieda Taylor, Ph.D.
Alfred Pattinson Telford.
Frederick Charles Thompson, M.Sc.
Albert Reuben Tremain, B.Sc.
Frederick Thomas Trustrum.
Sidney Charles Gunther Tweedy.
Adipudi Vasundhara, B.A.
Hubert Bradford Vickery, B.A., M.Sc., Ph.D.
Clifford Rex Wright, A.R.C.S.

The following papers were read :

"Passivity of metals. Part III. The quantity and distribution of the superficial oxide." By U. R. EVANS and J. STOCKDALE.

"The argentothiosulphuric acids and their derivatives. Part I. The preparation of the sodium salts and the isolation of monoargentomonothiosulphuric acid." By H. BAINES.

"Sugar carbonates. Part IV. The dicarbonates of glucose, fructose, mannose, galactose, and arabinose." By W. N. HAWORTH and C. R. PORTER.

"Isolation of crystalline α- and β-ethylglucofuranosides (γ-ethylglucosides) and other crystalline derivatives of glucofuranose." By W. N. HAWORTH and C. R. PORTER.

Ordinary Scientific Meeting, Thursday, December 19th, 1929, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :—

	Elected.	*Died.*
William Harold R. Allen	Dec. 1st, 1904.	Jan. 25th, 1929.
Frederick W. Dootson	Feb. 17th, 1897.	Dec. 12th, 1929.

It was announced that :

1. The Harrison Memorial Prize Selection Committee consisting of the President of the Chemical Society (Professor J. F. Thorpe, C.B.E., D.Sc., F.R.S.), the Institute of Chemistry of Great Britain and Ireland (Professor Arthur Smithells, C.M.G., D.Sc., F.R.S.), the Society of Chemical Industry (Dr. Herbert Levinstein), and the Pharmaceutical Society (Mr. L. Moreton Parry), had awarded the Harrison Memorial Prize for 1929 to Dr. Reginald Patrick Linstead.

The Prize is given for conspicuously meritorious work in any branch of chemistry pure or applied, and is to be regarded as an

exceptional distinction to commemorate an exceptional man and to be conferred upon the young chemist under thirty years of age who, in the opinion of those best qualified to judge, has made a notable addition to our knowledge of chemistry.

The presentation of the Prize will be made at the Annual General Meeting of the Chemical Society, on Thursday, March 27th, 1930, at 4 p.m.

2. The Hugo Müller Lecture, entitled "The Chemistry and Geochemistry of the Titanium Group," will be delivered by Professor G. von Hevesy on Wednesday, March 26th, 1930, at 5.30 p.m. at a place to be announced later. Tickets of admission will not be required.

The following were formally admitted Fellows of the Chemical Society: H. Alec S. Gothard, H. Rowland Hill, R. C. Shah, T. N. Mehta, F. C. B. Marshall, L. F. Levy, M. Barent.

Forms of Recommendation for Fellowship were read for the first time in favour of:

Harold Cordingley, B.Sc., Hawksworth Avenue, Guiseley, Leeds.
Mohammad Qamrud Doja, B.A., B.Sc., Doja Buildings, P.O. Bankipore, Patna, India.
Cecil Philip Ellis, B.Sc., A.I.C., School for Sons of Chiefs, Bo, Sierra Leone.
Nellie Ivy Fisher, B.Sc., A.R.C.S., 127, Wellesley Road, Ilford.
Giichiro Fuseya, Prof., Kogakubu, Tohoku Imperial University, Sendai, Japan.
Leslie Hey, B.Sc., 11, Sholebroke Place, Chapeltown, Leeds.
John Hunter, B.Sc., A.I.C., 17, Brunswick Road, Withington, Manchester.
Francis George Lamont, M.Sc., 81, St. George's Road, S.W. 1.
Sayed Mosallam, B.Sc., Sedfa, Eldwair, Egypt.
Edmund Brodie Robinson, B.Sc., A.I.C., Van Ryn, Glencroft Terrace, Darlington.
Albert Towers, M.Sc., 9, Cambridge Street, Guiseley, Leeds.
Harold Kenneth Whalley, B.A., B.Sc., Pembroke College, Cambridge.

The following papers were read:

"The influence of hydrogen and of water vapour on the ignition of carbon monoxide." By A. SMITHELLS, H. WHITAKER, and MISS T. HOLMES.

"The parachor and chemical constitution. Part XIV. Tellurium compounds." By F. H. BURSTALL and S. SUGDEN.

"Studies in 'strainless' rings. Part II. The effect of *trans*-decalin on the carbon tetrahedral angle." By K. A. N. RAO.

"Synthesis of 1 : 2-thiol-histidine." By J. N. ASHLEY and C. R. HARINGTON.

"2-Thiol-4(5)-β-aminoethyl glyoxaline (2-thiolhistamine)." By F. L. PYMAN.

The Council has made the following Grants from the Research Fund :

	£	s.	d.
Separation of hydrocarbon mixtures. H. Barron. (E. Lond. Coll.)	5	0	0
Unsaturated mono- and di-basic acids. S. E. Boxer. (Imperial Coll.)	10	0	0
Halogenation of anilides and phenolic ethers. A. E. Bradfield. (Univ. Coll., Bangor.)	15	0	0
Hydroxy carbinol compounds. F. W. Canter. (E. Lond. Coll.)	10	0	0
Orienting influence of groups containing sulphur and selenium when attached to the benzene nucleus. F. Challenger. (Manchester Univ.)	5	0	0
Solubility and electric conductivity of salts in anhydrous hydrogen cyanide. J. E. Coates. (Univ. Coll., Swansea)	20	0	0
Bacterial fermentations. R. P. Cook. (Sir William Dunn Inst., Cambridge	15	0	0
Hydroxy carbonyl compounds. F. H. Curd. (E. Lond. Coll.)	10	0	0
Alkylation of dihydroresorcinols. R. D. Desai. (Imperial Coll.)	10	0	0
Isocholesterol and other sterols—their isolation and relation to cholesterol. C. Dorée. (Chelsea Polytech.)	10	0	0
Resolution into optically active isomerides of certain compounds of quadricovalent platinum. H. D. K. Drew. (Birmingham Univ.)	20	0	0
Order of directive power of oxygen and sulphur (neutral) in aromatic substitution. G. W. Fenton. (N. Staffs. Tech. Coll.)	10	0	0
Investigation of diaryl ethers. Miss D. L. Fox. (Bedford Coll.)	6	0	0
Three carbon tautomerism. H. B. Fraser. (Imperial Coll.) ...	10	0	0
Kinetics of oxidation by alkaline permanganates. Miss C. M. Groocock. (Leeds Univ.)	10	0	0
Chemical dynamics of the reactions between sodium *m*-xylenolate and alkyl iodides. P. J. Hardwick. (Chelsea Polytech.) ...	6	0	0
Vapour pressure of water at 25° C. over aqueous solutions of metallic chlorides. J. R. I. Hepburn. (Northern Polytech.)	5	0	0
Degradation of ammonium and phosphonium compounds. L. Hey. (Leeds Univ.)	15	0	0
Substituted aromatic aldehydes in Hantzsch's pyridine condensation (*contd.*). L. E. Hinkel. (Univ. Coll., Swansea) ...	10	0	0
Synthetic uses of the chloro-ethylenes. L. Hunter. (Univ. Coll., Leicester)	7	0	0
(*a*) Chemistry of cytisine and related alkaloids. (*b*) Chemical, physical, and pharmacological investigations of quaternary ammonium bases. H. R. Ing. (Univ. Coll., Lond.) ...	15	0	0
Mutual solubility of the isomeric butyl alcohols. D. C. Jones. (E. Lond. Coll.)	10	0	0
Investigation of tertiary phosphines. W. J. Jones. (Univ. Coll., Cardiff)	10	0	0
Effect of *trans*-hexahydrohydrindene on the carbon tetrahedral angle. A. Kandiah. (Imperial Coll.)	10	0	0
Syntheses of derivatives of quinoline likely to possess anti-malarial action. W. O. Kermack. (R. Coll. of Phys., Edinburgh)	15	0	0

	£	s.	d.
Isomeric changes in unsaturated dibasic acids and the corresponding monobasic acids. J. T. W. Mann. (Imperial Coll.)	10	0	0
Investigation of diphenyl derivatives. Miss E. E. J. Marler. (Bedford Coll.)	6	0	0
Addition of hydrogen bromide to substituted butadienes. F. C. B. Marshall. (Imperial Coll.)	8	0	0
Exploration of methods for the synthesis of guaiacetic acid and pyroguaiacin. A. R. Martin. (E. Lond. Coll.)	12	0	0
Addition of esters to substituted sorbic esters. T. N. Mehta. (Imperial Coll.)	10	0	0
Mechanism of the formation of alcohols in the Hoffman degradation. C. S. Patel. (Leeds Univ.)	15	0	0
Co-ordination compounds of platinum and palladium. F. W. Pinkard. (Birmingham Univ.)	10	0	0
Orientation in the addition of hydrogen halides to simple and conjugated unsaturated systems. Miss E. Ramsden. (Leeds Univ.)	10	0	0
Hydroxy carbonyl compounds. A. Robertson. (E. London Coll.)	20	0	0
Attempt to synthesise diterpenes and diterpene alcohols. W. F. Short. (Univ. Coll., Auckland)	5	0	0
Effect of the solvent on reaction velocity. F. G. Soper. (Univ. Coll., Bangor)	15	0	0
Hydroxy benzene carboxylic acids. R. J. Stephenson. (E. Lond. Coll.)	10	0	0
Determination of the partial vapour-pressure curves in certain systems. M. Stern. (E. Lond. Coll.)	15	0	0
Transference of water; its dependence on the nature of the ions, and the concentration and temperature of the solutions used. Miss M. Taylor. (Bristol Univ.)	20	0	0
Influence of solvent on the reaction between Grignard reagents and activated $>CH_2$ and $\geqslant CH$ groups. S. H. Tucker. (Glasgow Univ.)	5	0	0
Bivalency of carbon (*contd.*). A. M. Ward. (Sir John Cass Tech. Inst.)	5	0	0
Estimation of nuclear reactivity in nitration of mono-substituted benzenes. D. Ward. (Leeds Univ.)	10	0	0
Stereochemistry of co-ordination compounds of platinum and palladium. W. Wardlaw. (Birmingham Univ.)	10	0	0
Additive properties of conjugated compounds. F. L. Warren. (Imperial Coll.)	10	0	0
Studies in the glucoside series. R. B. Waters. (E. Lond. Coll.)	12	0	0
Non-aqueous solutions. R. J. Winterton. (E. Lond. Coll.) ...	15	0	0
A reinvestigation of the glutaconic acid problem. C. R. Wright. (Imperial Coll.)	10	0	0
	£512	0	0

ANNUAL REPORTS ON THE PROGRESS OF CHEMISTRY.

Fellows are reminded that applications for the Annual Reports for 1929, Volume XXVI, at 5*s*. 6*d*. per copy, should be received by Mr. S. E. Carr without delay. Application must be accompanied by a remittance for 5*s*. 6*d*.

List of papers, or abstracts thereof, received between November 21st, 1929, and December 19th, 1929. This list does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal :

"The action of bromine upon the *p*-tolylhydrazones of benzaldehyde and of the nitrobenzaldehydes." By F. D. CHATTAWAY and A. B. ADAMSON.

"The chlorination of anilides. Part VI. The rates of *N*-chlorination of acetanilides and acetobenzylamides and the effects of substituents upon side-chain reactivity." By G. WILLIAMS.

"The vapour density of zirconium tetrachloride." By J. A. N. FRIEND, A. T. W. COLLEY, and R. S. HAYES.

"The isomerism of the oximes. Part XXXVIII. Alkyl-*p*-nitrobenzaldoximes, *O*- and *N*-alkylhydroxylamines, and sulphime-*S*-ethers." By O. L. BRADY and F. H. PEAKIN.

"The methylation of the oximes of benzil. Part II. The monomethyl ethers of the benzildioximes." By O. L. BRADY and M. M. MUERS.

"The reaction of cupric chloride and hydrazine sulphate." By T. IREDALE and C. E. MALLEN.

"Internal equilibrium in sulphur. Part II. Amorphous sulphur (S) as a gel and the Tyndall effect in liquid sulphur." By D. L. HAMMICK and M. ZVEGINTZOV.

"The solubility of sodium thiocyanate in alcohol." By J. R. PARTINGTON.

"Reduction products of the hydroxyanthraquinones. Part XI." By E. J. CROSS and A. G. PERKIN.

"The parachor of chlorine dioxide." By G. H. CHEESMAN.

"The study of nitrous acid as a nitrating agent. Part I. The nitration of dimethyl-*p*-toluidine." By H. H. HODGSON and A. KERSHAW.

"Hydroxyamino-acids." By W. J. N. BURCH.

"The interaction of ethyl l-mandelate and thionyl chloride in the presence of pyridine. The mechanism of the replacement of

hydroxyl by chloro-groups by means of thionyl chloride." By J. KENYON, A. G. LIPSCOMBE, and H. PHILLIPS.

"Lichen acids. Part I. Derivatives of β-orcinol." By A. ROBERTSON and R. J. STEPHENSON.

"The formation of glyoxalosazones by the interaction of dichloroacetaldehyde and aryl hydrazines." By F. D. CHATTAWAY and L. H. FARINHOLT.

"Colour reaction for some arsinic acids." By I. E. BALABAN.

"A new method for the preparation of 4- and 6-hydroxy-3-nitrophenylarsinic acids." By I. E. BALABAN.

"Syntheses of cyclic compounds. Part VI. A contribution to the chemistry of the 2-, 3-, and 4-methyl*cyclo*hexanones." By A. I. VOGEL and M. P. OOMMEN.

"An apparatus for the determination of solubility." By A. N. CAMPBELL.

"Substituted diaryl ethers. Part III. A new synthesis of substituted xanth-hydrols." By J. REILLY and P. J. DRUMM.

"Properties of conjugated compounds. Part IX. Addition of bromine to αδ-αγ- and βγ-dimethylbutadienes." By E. H. FARMER, C. D. LAWRENCE, and W. D. SCOTT.

"An improved receiver for vacuum distillation." By G. A. R. KON.

"Derivatives of lyxofuranose." By H. G. BOTT, E. L. HIRST, and J. A. B. SMITH.

"The action of substituted aromatic amines on camphoric anhydride, hydroxy-, methoxy-, and ethoxy-camphoranilic acids, and camphoro-methoxy, and ethoxy-phenylimides." By M. SINGH and R. SINGH.

"Anserine." By F. L. PYMAN.

"The heats of association of acetic and heptylic acids in the vapour state." By MISS T. E. FENTON and W. E. GARNER.

"The *p*-aminophenol arsinic acids." By M. A. PHILLIPS.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. I. Chemische Methoden. Teil 11, Heft v. Berlin 1929. pp. 877 to 1068. *M.* 10.

From the Publishers: Herren Urban & Schwarzenberg.

HILLEBRAND, WILLIAM FRANCIS, and LUNDELL, GUSTAVE ERNST FRED. Applied inorganic analysis: with special reference to the

analysis of metals, minerals and rocks. New York 1929. pp. xx + 929. 42*s*. 6*d*. net. (*Recd*. 28/11/29.)

From the London Publishers: Messrs. Chapman & Hall.

HINSHELWOOD, CYRIL NORMAN. The kinetics of chemical change in gaseous systems. 2nd edition. Oxford 1929. pp. viii + 266. ill. 12*s*. 6*d*. net. (*Recd*. 21/11/29.)

From the Publisher: Mr. Humphrey Milford.

II. *By Purchase.*

BENNION, EDMUND BARON. Breadmaking, its principles and practice. London 1929. pp. viii + 251. ill. 15*s*. net. (*Recd*. 21/11/29.)

CLARK, ALFRED JOSEPH. Applied pharmacology. 3rd edition. London 1929. pp. xii + 529. ill. 15*s*. net. (*Recd*. 21/11/29.)

GEE, GEORGE E. Gold alloys, their manufacture and application. London 1929. pp. viii + 336. ill. 16*s*. net. (*Recd*. 21/11/29.)

MANTELL, CHARLES LETNAM. Tin: its mining, production, technology, and applications. (American Chemical Society Monograph Series.) New York 1929. pp. 366. ill. 29*s*. 6*d*. net. (*Recd*. 22/11/29.)

MAUGÉ, LUCIEN. Les industries de l'azote. Paris 1929. pp. xliv + 684. ill. 160 *fr*. (*Recd*. 21/11/29.)

NORD, F. F. Mechanism of enzyme action and associated cell phenomena. [Baltimore, Md.] 1929. pp. x + 78. ill. 9*s*. net. (*Recd*. 21/11/29.)

SMITH, THOMAS BROOKS. Analytical processes. A physico-chemical interpretation. London 1929. pp. viii + 373. ill. 12*s*. 6*d*. net. (*Recd*. 21/11/29.)

WELLS, HARRY GIDEON. The chemical aspects of immunity. 2nd edition. (American Chemical Society Monograph Series.) New York 1929. pp. 286. 25*s*. net. (*Recd*. 21/11/29.)

WILSON, JOHN ARTHUR. The chemistry of leather manufacture. 2nd edition. Vol. II. New York 1929. pp. 499 to 1181. ill. 42*s*. net. (*Recd*. 4/12/29.)

III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research*. Pamphlet No. 13. The mechanical analysis of soils. By C. S. PIPER and H. G. POOLE. Melbourne 1929. pp. 19. ill.

KULLGREN, CARL, and TYDÉN, HILDING. Über die Bestimmung von Pentosanen. (From the *Handl. Ing. Vetensk. Akad.*, No. 94, 1929.) ill.

MEDICAL RESEARCH COUNCIL. Special Report Series No. 135. The carbohydrate content of foods. By R. A. MCCANCE and R. D. LAWRENCE. London 1929. pp. 73. ill.

MINISTRY OF AGRICULTURE AND FISHERIES. Research Monograph No. 6. A survey of the soils and fruit of the Wisbech Area. By C. WRIGHT and J. F. WARD. London 1929. pp. 71. ill.

—— —— Miscellaneous Publications No. 65. Variations in the composition of milk. London 1929. pp. 19. ill.

ROFFO, A. H., and CORREA, L. M. Über die Zerstörung des Cholesterins durch die Röntgenstrahlen "in vitro." (From the *Fortschr. Gebiete Röntgenstrahlen*, 1929, **39**.) ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Food Investigation*. Special Report No. 36. Postmortem changes in animal tissues—the conditioning or ripening of beef. By T. MORAN and E. C. SMITH. London 1929. pp. viii + 64. ill.

—— —— Special Report No. 37. The handling and stowage of white fish at sea. By ADRIAN LUMLEY, J. J. PIQUÉ, and GEORGE A. REAY. London 1929. pp. viii + 74. ill.

—— —— Index to the literature of food investigation. No. I, etc. London 1929 +. (*Reference.*)

—— *Forest Products Research*. Bulletin No. 1. Dry-rot in wood. [By PERCY GROOM and others.] London 1928. pp. vi + 24. ill.

—— *Fuel Research*. Technical Paper No. 22. The reactivity of coke. 2.—The examination of a number of metallurgical cokes. By JOHN HENRY JONES, JAMES GRIEVE KING, and FRANK STURDY SINNATT. London 1929. pp. iv + 30. ill.

—— —— Technical Paper No. 23. The fusion point of coal ash (Part I). By JAMES GRIEVE KING, ALFRED BLACKIE, and JOHN O'NEILLE MILLOTT. London 1929. pp. 19. ill.

—— *Water Pollution Research*. Technical Paper No. 1. Water softening. The base-exchange or zeolite process: summary of existing knowledge. By A. R. MARTIN. London 1929. pp. iv + 20. ill.

SEWELL, ROBERT BERESFORD SEYMOUR. Geographic and oceanographic research in Indian waters. Parts III–V. (From the *Mem. Asiatic Soc. Bengal*, 1927–29, **9**.) ill.

SHINODA, J., and KAWAGOYE, M. Über die Bestandteile des *Arctium Lappa, L.* Part I. (From the *J. Pharm. Soc. Japan*, 1929, **49**.) [In Japanese. German summary.]

SHINODA, J., and SATO, S. Synthese der Polyoxychalkone, Polyoxyhydrochalkone, und Polyoxyflavanone. IV and V. (From the *J. Pharm. Soc. Japan*, 1929, **49**.) [In Japanese. German summaries.]

SHINODA, J., and UYEDA, S. Über einen Bestandteil der Baumrinde der Pfirsiche. (From the *J. Pharm. Soc. Japan*, 1929, **49**.) [In Japanese. German summary.]

SOUTH AFRICA, UNION OF. *Department of Agriculture.* (Division of Chemistry, Series No. 102.) A portable apparatus for p_H determinations in the field. By P. KAMERMAN. (From the *J. S. African Chem. Inst.*, 1929, **12**.)

SWISS BANK CORPORATION. L'industrie chimique suisse. Bâle 1929. pp. 24. ill.

UNION OF SOCIALIST SOVIET REPUBLICS. *Scientific Technical Department of the Supreme Council of National Economy.* Central Institute for Tobacco Investigations. Bulletin No. 38. The chemical composition of consecutive pickings of the leaves of tobacco types "Samsun," "Dubec," "Trebizond," and "American." By M. PIATNITZKI. Krasnodar 1927. pp. 24. [In Russian. English summary.]

—— —— —— Bulletin No. 39. Influence of the air humidity and time factor on the fermentation of tobacco. By A. I. SMIRNOV. Krasnodar 1927. pp. 24. [In Russian. English summary.]

—— —— —— Report of the Meteorological Station. . . . 1915–1926. Krasnodar 1929. pp. 43.

UNITED STATES. *Department of Agriculture.* Circular No. 64. Cyanamid, its uses as a fertilizer material. Washington 1929. pp. 12. ill.

—— —— Circular No. 76. Fires in cotton gins and how to prevent them. By HARRY E. ROETHE. Washington 1929. pp. 8. ill.

—— —— Food, Drug, and Insecticide Administration. Service and regulatory announcements. Food and Drug No. 1. Regulations for the enforcement of the Federal Food and Drugs Act. (Ninth revision.) Washington 1927. pp. 19.

—— —— —— —— Food and Drug No. 2. (First revision.) Definitions and standards for food products. Washington 1928. pp. 20.

—— *Department of Commerce.* Bureau of Standards. Circular No. 373. Recommended specifications for quicklime for use in the distillation of ammonia from ammonia liquors obtained in coke and gas manufacture. Washington 1929. pp. 4.

—— —— —— Circular No. 374. *X*-ray and radium protection. Recommendations of International Congress of Radiology. Washington 1929. pp. 8.

UNIVERSITY OF OXFORD. INSTITUTE FOR RESEARCH IN AGRICULTURAL ENGINEERING. Bulletin No. 4. A Report on the development and costs of the Oxford Process for the production of sugar from sugar beet. Oxford 1929. pp. 55 + 6 plates. ill.

UVAROV, B. P. Insect nutrition and metabolism. A summary of the literature. (From the *Trans. Ent. Soc. Lond.*, 1928.)

VAIDYANATHAN, V. I. On the magnetic susceptibility of ozonides. (From the *Indian J. Physics*, 1928, **2**).

—— On the relation of diamagnetic susceptibility in the liquid and vapour states. (From the *Indian J. Physics*, 1928, **2**.) ill.

—— On the diamagnetism and structure of ethylene. (From the *Indian J. Physics*, 1928, **3**.)

—— On the magnetic susceptibility of ozone. (From the *Indian J. Physics*, 1928, **3**.) ill.

—— Influence of temperature on the *X*-ray liquid haloes. (From the *Indian J. Physics*, 1929, **3**.) ill.

—— *X*-Ray diffraction in liquids of the terpene series. (From the *Indian J. Physics*, 1929, **3**.) ill.